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The report discusses how teachers worked in various subject-matter areas and compares various teachers in similar and different areas. Observations were made on single groups of different areas. Observations were made onsingle groups of gifted children in the fourth, fifth, and sixth grades. More able students were found to accomplish more, delve deeper, and go beyond the requirements to carry out their own plans. Examples are given of creative writing experiences of the students in these grades. From these experiments bright students were characterized by their interest in everything, and their rapid and persistent search for evidence. The exceptions to these generalizations provide a challenge to teachers to identify and motivate these children.

The key professional person is the principal. He must find friendly and understanding teachers who use creativity and spontaneity in their teaching. The school should also be well-equipped.

The school experience should be stretched to challenge the abilities of the gifted while not neglecting the less able. The entire teaching-learning situation must support student growth. The report provides suggestions for improvement in administration, and teaching, and learning situations.

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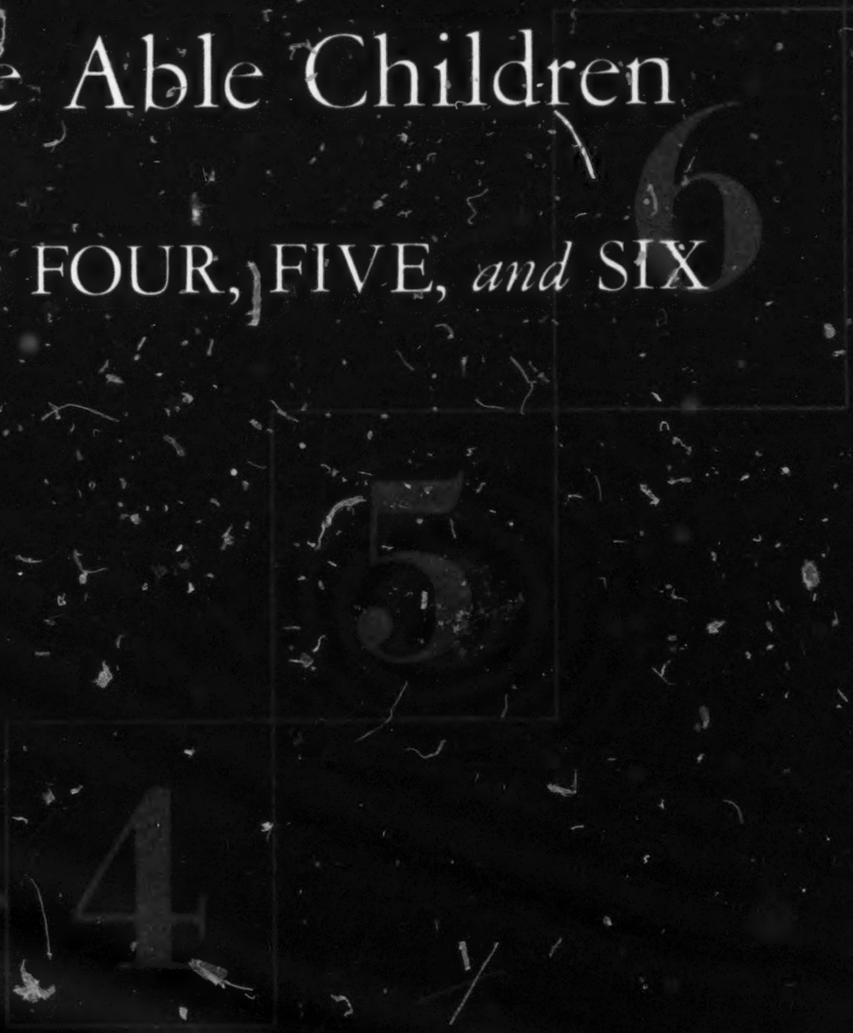

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Highlights

In teaching-learning situations considered "good" for educating the more able children, certain characteristics seem pervasive:

◆ Principals who demonstrate educational and community leadership, who know what it takes to make a good school, and who encourage growth in both children and teachers.

◆ Teachers who encourage and inspire children to ask and find out, develop their own powers, experiment, go beyond the obvious, and think critically and creatively.

◆ Materials and opportunities in abundance and readily available to facilitate growth in all types of children: books for information and pleasure; laboratory material to aid in seeing, doing, and understanding; trips for firsthand information; and opportunities to explore many cultural and scientific areas.

◆ A learning environment that supports individual counseling, activity, and study; individual and group work; and creativity in all its aspects.

OE-35006

EDUCATING *the* More Able Children *in* Grades FOUR, FIVE, *and* SIX

by Gertrude M. Lewis
Specialist for Upper Grades

Bulletin 1961, No. 1

Educational Materials Laboratory
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MAR 1961
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Foreword

IMPROVEMENT of educational opportunities for the more able children in our schools has captured and held the attention and imagination of the public. Many persons are asking what the elementary schools are doing to provide adequate education for these children, and others are suggesting what schools ought to be doing.

In response to this interest, the present study was undertaken by the Specialist for Upper Grades in the Elementary Schools Section of the Office of Education as an attempt to analyze some of the characteristics of the more able children and to report school programs which local educators consider to be good for these children.

The content of this bulletin was derived from several sources: a study of research in the field of the gifted, observations in selected schools, interviews with teachers and administrators, and examination of publications which describe school programs or activities. Some of these programs have been in progress for many years; others represent changes recently adopted by the particular school or school system.

Some programs place the more able children in heterogeneously organized classes, providing experiences or extensions of experiences for them over and above those provided for other children in the same classes. Other programs separate the more able children into homogeneous or special classes, where their experiences go beyond those provided for the children in the other classes. Still other programs use a combination of these two patterns, or other forms of organization, such as team teaching.

The present report does not attempt to evaluate the relative worth of these various ways of organizing schools to teach the more able children. It does, however, attempt to reflect the spirit of the teaching-learning situations, and to identify some elements which appear rather consistently in those schools giving particular attention to the education of these children, no matter what form the organization may take. This report should be useful to school personnel responsible for the education of the more able children in elementary schools and for the preservice or inservice education of teachers. It may also help parents understand better what the schools are trying to do.

Appreciation is expressed to the cooperating school systems (see appendix) and school personnel whose hospitality, cooperation, and interest made the study possible; and to the children—those who inspired the study, answered questions, volunteered information, and sent materials and letters to the observer.

E. GLENN FEATHERSTON,
Assistant Commissioner,
Division of State and Local School Systems.

J. DAN HULL,
Director, Instruction,
Organization, and Services Branch.

Educating the More Able Children in Grades Four, Five, and Six

I

Introduction

AMONG EDUCATORS there is wide recognition of the fact that most schools, within the boundaries of community support and the technical abilities of teachers, have helped children develop their individual potentialities well enough to satisfy their own needs and to contribute to the progress of society. Along with other adults, however, educators realize that the fast-*moving changes in our society and our world have brought about* social demands which more than ever require the development of constructive human potentialities wherever found, and particularly in individuals of superior endowment.

The grave problem facing those responsible for guidance of today's more able children is to find methods of helping them cope with present and anticipated future conditions in society, and at the same time to help them preserve or develop personal attributes and values which have long been considered essential in our society.

If schools are to be required to intensify their educational program for the more able children, (1) ways must be found to help teachers identify these children; (2) the educational goals for these children must be clarified by school personnel, parents, and leaders in society; (3) school environments must support the best development of the more able children; and (4) the processes used to educate them must be stimulating and productive of growth toward defined goals.

How to help a teacher identify the more able children is an area of much current, active research and the whole subject is in a very fluid state. Hence, the present report does not deal with that phase of educating these children, nor does it deal at length with the setting of goals. Rather, it concentrates on school environments and teaching processes, accepting the long-held conviction of educators that the elementary school should help all children achieve all their potentials for growth.

This bulletin reports the author's observations which formed the basis of the study. In the main, each "Teaching-Learning Situation" reports the activities observed in a single classroom, with a single group of children, thus making it possible for the reader to see how a teacher worked in more than one subject-matter area, and how various teachers worked in similar and different subject-matter areas. Following the presentations of observations in fourth, fifth, and sixth grades, and in several mixed-grade settings, an attempt is made to show the characteristics ascribed by teachers to more able children, and the elements which, in general, characterized the teaching-learning situations.

Included also are implications for school administrators and teachers, parents, and persons responsible for the education of teachers.

II

How Schools Are Organized To Educate the More Able Children

THE VARIOUS ORGANIZATIONAL PLANS found today in teaching the more able children are represented in the schools studied for the present report. In the *heterogeneous*, one-teacher-to-a-class plan, still predominant in elementary schools of the United States, skilled teachers "enrich" the experiences of the more able children. The enrichment is usually accomplished through the use of large study units in social studies, science, mathematics, literature, or other subject matter areas, in which the content is potentially so broad as to make possible its adaptation and extension for meeting a wide range of academic needs. These units are derived from guides or courses of study, from studies of children's needs and interests, or from current events in the community, State, Nation, and world.[1] Enrichment also takes the form of pursuing, individually or as a member of a committee, club, or cluster group, special interests or hobbies related to a study area; of carrying greater responsibility for contributions to class studies; and, in general, of delving more deeply and more broadly into the environment.

The *homogeneous* or special class type of grouping for the more able children has been followed in several large cities for many years. In most instances, children grouped in this way according to academic ability are expected to accomplish the same work that other children of the grade level are accomplishing, but they also have additional opportunities to extend their skills and deepen their understanding. These opportunities may be to learn a foreign language, take special trips, or have enriching experiences in art, music, reading, science, social studies, or any other area, much as is done in heterogeneous classes.

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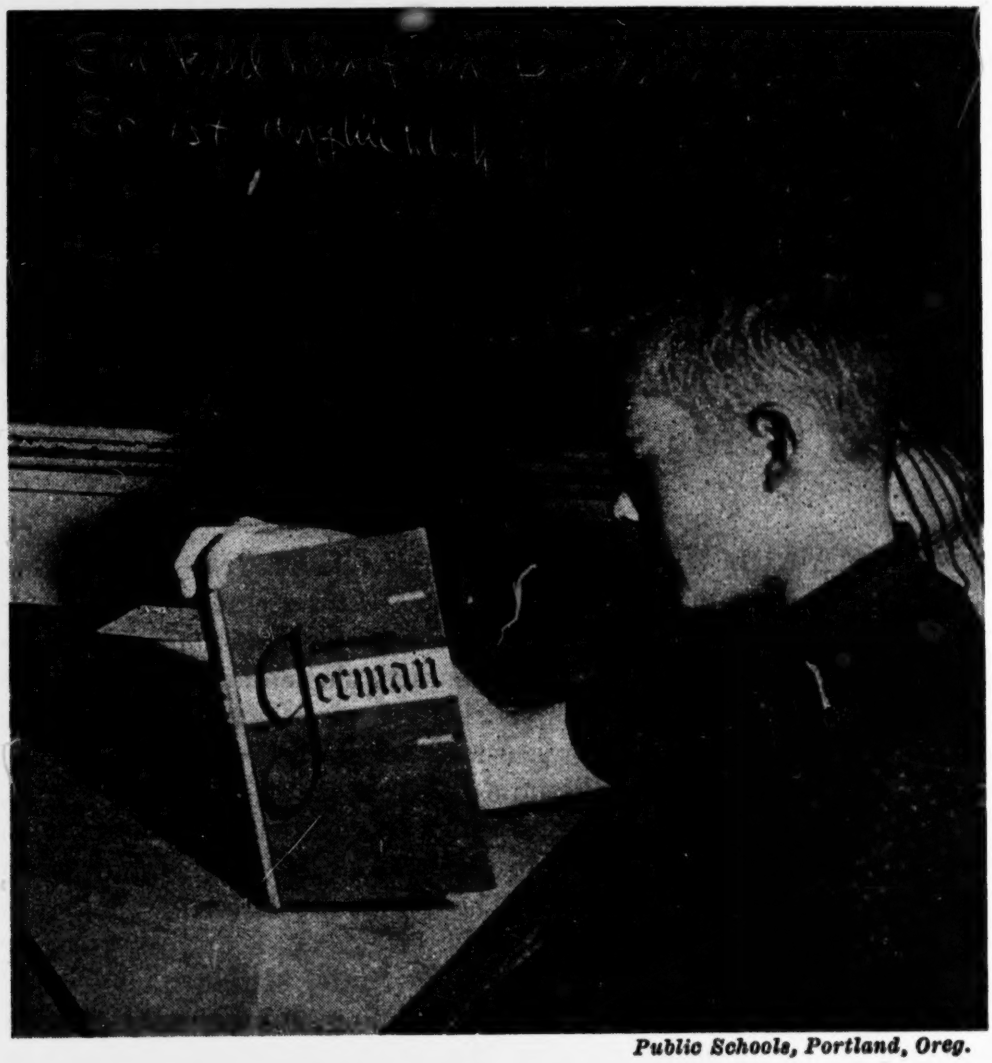
[1] See Havighurst, No. 19 in the bibliography.



Public Schools, Portland, Oreg.

Sixth-grade club studies German.

Rarely does enrichment or special grouping mean speeding up the work so that some children may finish school earlier. Where it does mean this, plans are made cooperatively with the receiving grade or the junior high school so that children who are advanced in their work are taught without useless repetition or delay. Accelerating their progress through school, however, does not appear to be the direct aim of any school included in this study.

The present viewpoint of educators is, in the main, that children must be selected for acceleration individually, after assessment of all the characteristics of the child, and careful projection of the possible effects of acceleration upon his total development. Parents are usually invited to cooperate with the school in weighing the assets and liabilities and in reaching a decision. Even when a child is selected to be accelerated, he does not actually skip the work of a grade. Rather,

Public Schools, Portland, Oreg.

Sixth-grade club studies algebra.

a telescoping plan is worked out in which he does the required work of 2 years in 1, or 3 years in 2, with guidance individualized to give continuity to his academic progress and social adjustment.

Among recent experiments in grades 4, 5, and 6 is that of *team teaching*, a process in which several teachers, closely knit through cooperative planning and through consideration of common problems and mutual guidance of children, share the teaching of the children in their classes. In its best form, this plan aims to utilize teacher strengths in teaching and at the same time to give individual guidance to the children.

III

School Experiences Challenging Children's Abilities

IN MANY CLASSROOMS where excellent teaching occurs, it is difficult to point out specifically what it is the more able children are doing that others are not doing. When all children are encouraged to use their fullest ability, differences show both in quantity and quality of achievement, but on a sliding scale, from the slowest learners to the most able. For instance, all write composition on similar or different topics, but the range of performance or accomplishment is great—in content, form, accuracy, and style. All take part in social studies and science projects, but some do vastly more work, and work of greater difficulty, than others do. All learn new words from the subject fields, but some increase their reading and speaking vocabularies at tremendous rates. The difference is chiefly that the more able accomplish more, delve deeper, and go beyond the requirements to carry out their own plans.

A well-known educator said of the elementary school of which he is director: "Activities are not especially designed for the more able children: they are 'built in.' Teachers challenge the children, especially in Science, which has a well-defined but flexible curriculum in this school from grade 4 up."

The key to insurance that the more able—and in fact, all children—will realize their potentialities, said this educator, is individual guidance. "The total program must be organized to secure individual guidance. Materials and counseling are needed. We—schools in general—are running way behind in this."

The school visits made for this study disclosed good teaching-learning situations in all the types of organizations for the more able 4th-, 5th-, and 6th-grade children. A comparison of the relative advantages and disadvantages of these types of organizations is not within the scope of this study. Such a comparison, which is sorely needed, involves long-range, scientifically controlled study in local schools. Studies to date have not been carried out long enough, nor have they given sufficient attention to the numerous significant variables, to warrant reliable conclusions.

It is noteworthy, however, that no matter what the organizational pattern, in every teaching-learning situation pointed out as being "good," there was a pupil-teacher ratio of about 22–30:1, making it possible for the teacher to give considerable guidance to individuals and to groups.

The on-the-scene observations of actual classroom procedures that begin below were selected because of their obvious lead-on possibilities and the challenge they present to the more able children to go beyond: to probe the depths and breadth of knowledge; and to develop new skills. No limits were set for any activity. Instead, the ever-present implication was that the activity, the study, the searching for knowledge or understanding—in short, the learning—could be stretched to meet the interests and capacities of the most capable child in the group.

Every situation reflected a conscious effort on the part of administrators, supervisors, and teachers to provide (1) stimulating, work-inviting environments for study; (2) materials and opportunities to facilitate learning in many directions; and (3) skillful guidance of every child toward maximum development. When such environments, materials, and guidance are provided, children pursue interests and attack problems, and they take action to organize the environment, both at school and at home, in order to enable themselves to work conveniently and effectively. They become aware of what good study habits are and tend to adopt them for their own use.

Teacher guidance, in the situations observed, was often indirect, in the form of suggestions, allowing much leeway for child expression and self-direction. The assumption is reasonable that whenever children are enthusiastically engaged in any classroom activity, it is the teacher who has recognized and encouraged an already existing interest, or has stimulated the interest in the first place.

It is hoped that the reader will examine the ensuing accounts with a ready eye for the places where children of high ability in any line might find an open door to go ahead, to delve deeply, to think broadly; in short, to try their wings courageously in an environment that offers adventure at the same time that it provides security.

Fourth-Grade Experiences

Teaching-Learning Situation No. 1*

Reading and creative writing.—Upon entering the classroom, the visitor had a feeling that serious activity was underway. One group was reading with a student teacher; another with the regular teacher. The other children were working individually at desks, on arithmetic and reading. As they fininshed, they took out books or went to get them from a table or from shelves.

A table held a display of rocks and attractive books about rocks. Open shelves and cupboards also held books, arranged by school subjects and numbering, in some cases, as many as six or eight copies for each title. Among the volumes were encyclopedias.

Mrs. Thomas, the teacher, called "Jane's group" to come to the front of the room, as she quietly indicated to the observer that this group contained the more able children. Eight children set aside what they were doing, picked up their readers and came and sat in a semicircle. The teacher invited the children to comment on what they had been reading. The response indicated that all were enthusiastic about the story. When a child remarked, "The story said he was so hungry he ate like a pig," the teacher joined in the laughter, and then explained, "That is a figure of speech." The children discussed the meaning of a figure of speech, and, together, they and the teacher demonstrated that we all commonly use figures of speech. A child (later pointed out as the brightest) remarked, "Authors use them a lot." She added, as if to herself, apparently relishing the words, "It's a novel approach." The teacher said Jane had been writing stories since early childhood.

Turning to the story, the teacher assigned parts to be read aloud as in a play, and asked one child to be narrator. The chuckles which accompanied the reading were evidence of interest in the subject matter, and the fact that the children had to be helped occasionally seemed to indicate suitability for reading improvement. Specifically:

1. They needed help in identifying words. The teacher called their attention to small words within words, and to the sounds of letters and word parts.
2. They needed help to separate quotes from narrated text.

Occasionally the teacher interrupted to have several children take turns reading the same part, thus bringing out the variety of meanings which varying expression will bring to the same phrase.

At the close of the reading lesson, the teacher suggested that the children work independently, and made clear what they were to do. "When you finish with that," she said, "you have your arithmetic to complete, and your spelling to study."

"May I work on my rock report?" asked a boy.

"Yes, work on whatever seems most necessary," she said; and with a busy air of confidence, the children went to their individual desks.

The next day during the observer's visit, the children worked at creative writing. The teacher pointed to a list of descriptive phrases on the board, and said, "The underlined words help us to see, or feel, or hear. Do you know what they mean?"

golden rays
lively maiden
sunny day
bare feet
lazy torch
whistling wind
low value
chattering monkey
creaking noise
banging door

Together, with a mixture of humor, whimsy, and seriousness, teacher and children worked out the meanings.

"As we write our stories, maybe we can use some of these words," she said. Then, to each group of four children she distributed magazine pictures having high story value. The children enjoyed these for a few moments, then settled to their writing. By the time the observer was ready to leave, several had made considerable headway, while others were still "thinking up an idea."

**Heterogeneous class.*

Teaching-Learning Situation No. 2*

Science.—The children were showing posters they had made about science studies. Gordon's was entitled *Facts About the Moon.* He had gone to the library and found "good facts" which he had written down, had cut pictures from a magazine, and had made an attractive poster. The teacher asked, "How much would you weigh on the moon, Gordon?"

"I would weigh one-sixth as much as I do here. I weigh 64 here. If you use 60, I would weigh 10 pounds there."

Jeff reported, "If you jump 5 feet here, you would jump 30 feet there because you are lighter."

Gordon: "Athletes would jump about 100 feet."

Another poster pictured the moon orbiting around the earth and the earth orbiting around the sun. Two others posed questions:

We Wonder and Find Out
About Magnetism

What does a magnet do?
How does a compass work?
What is an electromagnet?
How are electromagnets used?

Electricity

How is it made?
How does it move?
How does it work for us?
Who discovered electricity?
How?

A table held a magnet, a telescope, and other equipment.

The teacher presented a magazine page with 28 numbered pictures of electrical appliance parts. The children gave themselves numbers to correspond and each tried to identify the appliance bearing his number. This activity afforded them both pleasure and learning.

Mathematics.—The children showed models which they had made or otherwise obtained. One child explained how to use a candle with marks; another, how the sun dial ("which is inaccurate") functions; and a third, how the electric clock ("which uses units of measurement") works.

The following dialog between the teacher ("T") and one or another child ("C") took place:

T—*What is a unit?*

C—A part, a piece, a fraction, a measure, a section, an amount.

T—*Yes; a unit is an amount of measure. Can you name some?*

C—Scales: Pounds, ounces.

C—Liquid: Quart, pint, ½ pint, measuring cup, 1 cup, ½ cup, 1 tablespoon, 1 teaspoon.

T—*Are these the same?* (Picking up a measuring cup and a half-pint jar. Children thought not.) *Prove it.*

A child went to the table and eventually showed that both held the same amount.

C—There is dry measure, too.

C—There is a cash register, too; it uses money measures.

T—*Here are some problems using measures. If you can buy 1 pound of coffee for 71 cents, and 3 for $2.07, how much would mother save if she bought 3 pounds?*

C—6 cents.

T—*Would it be a bargain?*

C—Yes—no; my mother doesn't buy coffee. No; we don't use much and it might not keep.

T—*Two-thirds of an ounce of cologne sells for $2. How many thirds are in a whole ounce?* (All knew.) *How much would a whole ounce cost?*

C—$3. It would be $1 for each third.

T—*Why is cologne sold by the ounce?*

C—It is expensive. It loses its smell if you have too much.

C—(Read aloud an advertisement about a snow pusher with a 21-inch blade for $11.98.)

T—*How much is 21 inches? Show with your hands.* (Children showed great difference in ability to do this.) *Can you draw it on the board?* (Child drew a line.) *Prove it with the yardstick.* (The line measured about a yard.) *How much would $11.98 be in round numbers?*

C—$12.

T—*Coffee is measured by dry measure; cologne by what?*

C—Liquid.

T—*Yes; and 21 inches is linear. The word "line" is in it. What do we measure with linear measure?*

C—Wideness and length.

T—*Yes; width and length.*

C—And how high.

T—*Yes; depth. Length, width, and depth. Think of an ice cube: how long, how wide, how deep. What do we call it when we measured all three ways?*

C—Cubic measure.

T—*Well, what other kinds of measures are there?*

C—Time.

T—*Yes. Isn't it fascinating? Do you want to study how time is measured?*

Children—Yes!

T—*We'll begin on Monday.*

Reading.—Some children took out library books, among them *Mary Poppin*, *The Great Houdini*, *Skyscraper Island*, and other well-known and more current books. As these children settled to read, the teacher said to a small group who were reading identical books, "Remember as you read that you are to pick out good topic sentences to read aloud to us. Is there anyone who does not remember what a topic sentence is?" (None.)

As the children read, the teacher called several individually for a conference on their reading. Eventually she called the small group.

T—*What did the cadets have to know?*

C—The cadets had to know the 3 R's: readin', 'ritin', and 'rithmetic, to get in.

T—*Can you tell at once what the story is about?*

C—School.

T—*Not exactly.*

C—West Point. That's where cadets are.

T—*Let's read our topic sentences.*

The children then read:

> "That night at 20 minutes to 10, the *Maine* blew up with a terrific explosion."
>
> "The crewmen scurried across the decks, started the engine, got up the steam . . . ." (Teacher helped them pick out the lively action words: *scurried, scuttled, scrambled.*)
>
> "At that very moment a loud voice sounded from . . ."
>
> "There was no suspicion in his mind that this beautiful May Day was the most important day in his life."

T—*Which sentence could you have used in your creative writing of the "Unexpected Gift"?* (These were delightful stories, fastened to the bulletin board. Some were about Hanukkah and some about Christmas.)

The teacher later explained to the observer that she used individualized reading in basic series and in other books. Children read independently, each proceeding at his own rate. She showed the reading analysis chart which she maintained, listing individual accomplishments and needs. The chart included: (1) word recognition, context clues, phonetics, consonants, digraphs, vowels; structural roots, compound words, prefixes, suffixes; (2) composition skills: main idea, details, sensory impressions, understanding emotional tones, drawing inferences, choosing titles, topic sentences; (3) work-study skills: locating information, skimming, organizing facts, dictionary skills, tests.

Spelling.—The lesson dealt with difficult words. In working with them, the children had a great deal of fun:

speak—freak—break—brake
goose—loose—shoes—lose
comb—tomb—bomb
done—gone—lone
rough—through—bough—slough—cough—through

Social studies.—Posters made clear what the theme was and what the subtopics were. The latter were each on a separate poster. The theme of the unit was: "How does New York City provide us with everything we need?"

The subtopics: How may kinds of work do people do in New York? What services does our city government give us? How does New York provide a water supply for all its people? How do people live in a big city like ours? Why is our borough important to the city? Why is living in New York so exciting and wonderful?

Other posters listed what a good chairman and a good committee member do and suggested the use of some of the following: encyclopedias, textbooks, magazines, maps, globes, trips, movies, and strip films, radio and television, picture files, newspapers, and people.

The children grouped themselves into six committees, moving tables and chairs together for group discussions. They discussed the subproblems in order to choose those they wished to study. Chairmen had served their time, and it was now necessary for each group to choose a new one. (The teacher explained to the observer that previously the chairman had chosen the question to study; today it was to be done by cooperation. This was a first venture.)

In one group, only three (half the members) were present. "This," said a boy, "is not a quorum. Decisions cannot be made."

T—*Why not?*

C—Because these three might go for Bob, but the other three might not. It isn't more than half.

T—*But you can go ahead with work, can't you?*

C—Could we elect a temporary chairman?

T—*Yes, that might be a good thing to do.*

The children worked with many books, pamphlets, magazines, and newspapers as the teacher moved from one group to another. Eventually she called time and the children returned to their seats. Discussion was postponed until next day.

Current events.—A child told how the city schools were being checked for fire safety, and how one nearby school had been closed for 7 days to "fix up."

Another reported, "Juno will be fired this weekend."

The teacher asked how *Juno* and *missile* were spelled. The child knew how to spell *missile*, but thought that *Juno* was spelled *Juneau*. She said she would find out how to spell the name of the missile correctly and then give a report.

The teacher called attention to the fact that it might be named *Juneau*, but it might also be named *Juno* (writing the two words on the board). She asked why this was true.

C—For a Greek—or Roman—goddess.

C—William Knowland says Nixon is qualified to be President in 1960. Knowland was defeated for governership of California.

T—*Which political party?* (No response.) *Guess.*

C—Republican, because the Democrats were defeated in the election.

C—The Democrats would not suggest Nixon for president!

T—*It should be an interesting election in 1960.*

C—(Gave news about Perry Como and Frank Sinatra.)

T—*That's the lighter side of the news.*

Music.—Melody bells were now tried for the first time. The eight bells were distributed and children played chords and *Jingle Bells*.

Creative writing.—In the middle of a discussion, some voices apparently came from the sky. The children said the sounds were those of a pilot's voice. Some said this would make a good start for creative stories, and some declared that they would write them "that very evening." (After school, the voices proved to have come from the fire department working in the street getting ready to examine this school building.)

**Homogeneous class.*

Teaching-Learning Situation No. 3*

Art.—Some children got together on the floor to make a three-dimensional mural that was too large for any table in the room.

There were wide differences in their skills and in the value of their ideas about how to achieve the results they wanted.

Science.—On the board in the fifth-grade homeroom were three leading health or science questions, inspired by the Salk vaccine shots then being promoted on television.

> What is put into your body through shots, that helps you to keep from taking disease?
>
> How does your body protect itself from diseases?
>
> Why do some people catch diseases, especially colds, and others don't, even when they go to the same places?

Later, in the science workshop, the visitor heard the teacher ask, "Did you find anything about Jonas Salk?" Three of the children had talked to adults outside school and two had checked in a book. The encyclopedia, said one boy, had pictures about vaccination.

**Heterogeneous class.*

Teaching-Learning Situation No. 4*

Science and social living.—A well-worked-out schedule of activities for the day was on the board, but a set of tiny motors which the teacher had ordered had arrived unexpectedly. The children were eager to assemble them.

On a board, a sketch, *Household Motors*, showed large pieces of electrical equipment: a boat motor, a car motor, a discarded washer, kitchen utilities, a clock, an automatic washer, a refrigerator, a garbage disposal, and a dishwasher. Also on the board was a list of words which the children presumably had requested for use in writing their daily logs of individual accomplishments:

- planning
- heading
- spelling test
- discussion
- workbench
- drawing pictures
- library
- recorder
- play
- unit
- juice
- football
- painting
- arithmetic
- writing
- German club
- report
- swimming

The following books were on a table:

Bradley: *Engineers Did It!*
Hartman: *Machines*
Leipen: *Elements of Mechanics*
Morgan: *The Book of Engines, Motors, and Turbines*
Morrow: *Things Around the House*
Rick: *Automobiles From Start to Finish*
Sharp: *Simple Machines and How They Work*

Some of the work of the day was reviewed: spelling, arithmetic, reading. The children then began to work on the motors. Many could proceed on their own, but all needed help to adjust the parts and establish a current. The day was spent in decorating for Halloween, working on motors, physical education, library reading, spelling, and arithmetic. One group went to the school library and, with the help of the librarian, selected 50 books to be used for an anticipated study of biography and history.

**Heterogeneous class.*

Teaching-Learning Situation No. 5*

Science.—The theme was *Water Life*, introduced recently, following study of the theme *Living Together in Our School.* The teacher called attention to a leech which Bob had brought in.

T—*I brought him the "L" volume of the encyclopedia. Why did I choose this volume?*

C—So he can look up leeches. The word starts with "l".

C—I put my crawfish in our home water and it died.

C—The water has chlorine in it. He should have used creek water.

T—*What did you feed it?*

C—A commercial food. I read the ingredients. They were printed on the label.

T—*Does your mother usually read the labels on prepared foods?*

C—Yes; my brother is allergic to some things. She has to be careful.

T—*What else does your mother notice on labels?*

C—The price. Some company might make the same thing and sell it for less.

C—The quality.

C—The weight.

T—*Yes; if there were a big can and a little one—two little ones might be the better buy.*

C—The big one would have more tin or glass to be weighed.

C—No; they put on what the ingredients weigh.

T—*Yes; that is the net weight. If they weigh the can and the contents, too, that is gross weight.*

The teacher then turned to the major interest, the study of water life. She explained, "If you have pinpointed an interest, some of these books will help you. Here is one on tadpoles for Nellie." She then called attention to the following books:

Animal in Small Ponds
Fresh Water Lakes
Frogs and Pollywogs
Hop, Skip, and Flies
Let's Go to the Brook

Fishes
Frogs and Fish
Fungus Plants
Insects
Let's Go Outdoors

The University of Michigan Laboratory School, Ann Arbor

Fortunate the children in a school with rich library resources.

Pond Book
Springtime in Brooks
Water Birds
Reptiles
Turtles (2 books)
Water Spiders
The Wonder of Living Things.

As the teacher exhibited the books, the children's comments showed their enthusiasm and their eagerness to "find out." About *Fungus Plants*, a child said, "We saw these plants on our trip"; about *Insects*, another said. "This book will have mosquitoes in it."

These books and many others were lined up on the chalk tray and tables for the children to use.

"These will give you good material for notes," said the teacher. "About notetaking, let's talk a little. Take notes only, not whole paragraphs. Like this: What do we need to keep our animals alive?"

As various children volunteered, she put the contributions into the following simple outline:

1. What do I need to provide?
   A natural habitat.
2. How can I help keep them alive?
   Feed them.

T—*Your mother uses notes when she makes her grocery list. She puts down bread, meat, butter; not "I need bread, etc." Sometimes we use phrases for outlining, too . . . What do we investigate in a book to see if it has what we want?*

C—The table of contents.

T—*Yes; it gives chapter headings.*

C—The index.

T—*Yes; for smaller details.*

The children got books and returned to their seats. A boy was heard to say, "Mine has a wonderful index!"

**Heterogeneous class.*

Teaching-Learning Situation No. 6*

Sharing.—A girl had brought a big box of sand. The sand was shaped to form a hill. She explained that she was going to show erosion, and asked that someone bring a bottle of water. She poured the water on the hill, saying, "Watch the erosion. The water is like rain. It eats away the sand."

T—*Has it changed the contour?*

C—Yes! (Explained in great detail what had happened.)

T—*Like Niagara Falls?*

C—And Great Falls.

C—And the Grand Canyon.

C—Will Niagara Falls disappear? (This was discussed, emphasizing the fact that changes in nature usually happen very slowly.)

A boy and a girl attempted to demonstrate surface tension. They had a plastic pan of water upon which they floated pepper. Amidst the sneezing, a boy asked, "Why doesn't it sink?"

C—Because it's too light to disturb the surface tension. Now I'll put in some soap flakes. Watch what happens. (The pepper spread; some of it sank. The soap sank.) The surface has been disturbed. Some insects can walk on the water because they don't rearrange the molecules.

A boy said he had an oxidation experiment. He was not permitted to show it because one had already been shown.

T—*How can we avoid duplication?*

C—But this one might turn out to be different. (This caused lively discussion.)

T—*Well, let's hear both sides.*

C—We should not: it spoils the fun and wastes our time.

C—We should: it might turn out different, especially if different ingredients were used.

T—*But it should have one result.*

C—Well, you might think you have the same ingredients and not have.

T—*Well, let's go ahead.*

(The tension broke into mirth when the boy said he wasn't ready anyway.)

T—*Let's evaluate the experiments.*

C—There were too many helpers.

C—I have a suggestion to solve that. Have the person pick a helper.

C—They could have told more if they had written out the experiments. (The children disagreed with the speaker.)

C—In the erosion one, they should have had a glass container so everyone could see.

T—*Can you say it so it applies to all of us instead of just to one?*

C—The containers should be prettier and we should be able to see through them.

**Heterogeneous class.*

Teaching-Learning Situation No. 7*

Science.—The children were working with oaktag, making diagrams to show the relative distances of the planets from the sun. On the board was a table which the children had worked out, giving millions of miles, and showing an example key: ¼″=100 million miles; 1″=400 million miles.

Each child was now using his own key. The teacher explained that this was an outgrowth of bar-graph study in arithmetic.

As the children finished, they went to other activities. Three played chess, and several consulted library books.

On the bulletin boards hung booklets entitled *Animals of Today*, *Chemistry in Everyday Life*, *Clothing*, *How the Locomotive Began*, *Jamestown*, *Naval Action in World War II*, *New York City*, and *New York State*.

**Homogeneous class.*

Teaching-Learning Situation No. 8*

Language arts and science.—The children were finishing up an activity period and some boys were putting these questions on a bulletin board:

Balloons and Parachutes

We Want to Know:

How was the first balloon made?
What makes a balloon rise? Come down?
What is a parachute? What is it used for?
Why does a parachute used by a flier have to have such a large canopy?

When individual reports were called for, a girl told about the Conference of Southern Governors which had just been held. Using the newspaper and chamber of commerce publicity materials issued by the conference and by the city where it had been held, she explained how the Conference of Southern Governors was formed, the sort of work it does, and such a host of details that the children were amazed by their number. When she sat down, the children (one of them leading) evaluated her work on the following points, which are listed on the poster: Beginning sentence, topic choice, worthwhile facts, correct English, visual aids, distinct speech, posture, preparation, use of notes, and closing sentence. She was rated "excellent" on every point.

Another girl, Linda, made a report on *The Hunting Wasps*. To show how these wasps look, she used large drawings hung from an easel, and she turned them over one by one as she talked in turn about each wasp. The gist of her talk follows:

There are five kinds of hunting wasps:

1. Caterpillar Hunter (*Ammophila*)—the only user of tools except man.
2. Subterranean Hunter (*Scolia*)—a giant, 3 inches long. Hunts grubs, especially Japanese beetles.
3. Fly Hunter (*Bembex*)—puts her eggs in a mud tube. Paralyzes one fly, puts it in a tube, lays an egg, and closes the tube. Flies which are parasites might destroy the wasps that feed on them! This is irony!
4. Cement Maker (*Odynerus*)—Using saliva or one drop of water, she moistens the clay, makes a beautiful bench circle shaped for her babies, spoils it by plastering mud all over it. (Chuckles!)
5. Spider Hunter (*Pompilus*)—Rather aggressive. Attacks the tarantula, inserting a sting again and again behind its leg.

"Why do wasps not kill their prey?" asked the speaker, and then answered her own question. "They want their babies to live, and a jelly made from the live bodies of the prey is necessary for the wasp babies. They don't often sting humans, because to a wasp mother, these huge monsters don't seem like tasty morsels to feed her babies."

Each story was a delight to hear. Linda explained in the discussion that she had worked over and over to get good original opening and closing sentences.

C—What is a segment?

L—*Well, you've seen a caterpillar, I hope.* (Chuckle.) *You know how it is jointed. One joint is a segment.* (Draws on board to illustrate her point.)

C—What are mandibles?

L—*Jaws.*

C—How long is a bembex?

L—*1 inch. Others are one-half to an inch longer. It is the pygmy.*

C—Linda seemed to look at this side of the room and then over there.

L—*My father told me that the way to get attention is to direct an idea to some one person and then shift to another person.*

C—My speech teacher says you should look people in the face.

C—I thought Linda held our attention.

It was evident that in evaluating, children could find no terms to express Linda's excellence. When they came to vocabulary, the children laughed appreciatively. "It didn't sound as if it came out of a book, either," said one. The teacher remarked, "Where she quoted she said so. Did you notice?"

The children said yes, but wanted Linda to repeat that part, so they could "hear it again."

When they evaluated her closing sentence, Linda said, "I changed it several times to get it more original."

**Homogeneous class.*

Teaching-Learning Situation No. 9*

Social studies.—It was an exciting time. Bread and butter were to be made, as in earlier times. Groups had been chosen, one to work at bread and one at butter. The bread recipe was on the board, and the teacher had set the yeast the evening before. Now, in the bread group, ingredients were on hand, brought by the children from the Home Making Center. Bowls, measuring cup, measuring spoons and wooden mixing spoons, wax paper, glass baking dishes, and towels lay on the table. As the children took turns measuring, mixing, kneading, it was quite evident that their abilities varied in all these activities. Some measured accurately; some mixed without splashing, reaching to the bottom of the dish; some kneaded to the center, wrapping fold over fold and working it in.

In the butter group, the churn had been secured, cream was poured in, and the children were taking turns at the churn. Eventually, their excited voices announced the appearance of butter. Now each had a chance to pat out the buttermilk and it was stored for future use.

It was 1:15 p.m. and the children were putting the precious loaves in the Home Making Center oven. While all waited for the bread to bake, a committee washed the dishes. At 1:55 three golden loaves were cooling on the racks. Now the last of the dishes, the breathless cutting, the proud serving, and the happy, tired children going home to report.

Gifted? Who knows? Perhaps among the group are the food chemists and the highly intelligent home makers of tomorrow. "All children are gifted," said the teachers of this school again and again. "It is up to us to set the stage so creativeness in any line may be released and interests pursued."

On the classroom wall were pictures of pioneer life, commercial and child made. On the tables were colonial and pioneer bowls, spoons, irons, kettles, coffee grinders; and books about many subjects, carefully moved away from the flour and butter, but easily accessible when needed.

**Heterogeneous class.*

Fifth-Grade Experiences

Teaching-Learning Situation No. 1*

Current events.—The children were engaged in an informal discussion of current events, especially the request of the Russians that we take our troops out of West Berlin. As they talked, they made the following points:

C—A German scientist was on *Meet the Press* yesterday.

C—The failure of *Juno* was not really a failure; we got a lot of information from the broadcast.

C—There was a cartoon in the paper about Berlin. It showed the tail wagging the dog.

T—(to visitor) *We are interested in cartoons because we made some about Germany and Russia.*

T—*Here is an editorial from "Life" about the German-Russian situation. (Read it aloud to the children. As she read, their attention went quickly to details. They looked up words and places, and discussed meanings.)*

T—*Let's read some of the editorials we have written.*

Several were read aloud: *Probing the Universe*, *Don't Trust Any Country Too Far*, *Homework for Christmas*, and *Homework for Hanukkah*. The class talked about the difference between editorials and the news.

Later in the day, the children divided into sides to debate whether the United States, France, and Great Britain should withdraw from West Germany. They discussed the meaning of "pro" and "con." The chairman introduced both sides and called on the "pros."

The case was stated: Our troops should stay because Russia is trying to trick us. If we get out, the Communists will take over and grow. We don't want Berlin to be Communist. We don't want communism to grow in control. This would be a steppingstone for communism.

The "Cons": If we stay, we may start a war, and we're not sure we can win it. If we lose, communism will grow.

Rebuttal: If we give in, the corridors would go. The corridors could go anyway and still we would have to get to West Berlin. The airlift worked once but might not work again. The Russians have troops nearer than we do.

The chairman asked whether there were questions.

T—*If the Communists asked or threatened you, would you take the troops out?*

C—No; we have as much power as they do.

C—We might have to. There are many more Communists there than we have people. (He gave the figures from the New York *Times*.)

C—If we do take them out, we must help Berlin to plan ahead. We do have a chance to win.

C—If we show Russia we are afraid, they'll do something else.

C—I now agree with the Cons. If we both remove troops, perhaps there will be no war.

C—But we would lose West Berlin's friendship.

Social studies.—The children and the teacher reviewed together what had been learned about the Constitution of the United States. They then proceeded to a discussion of amendments. Keen interest was shown in the 21st, translating it as a decision that our Government was not to say what people would eat and drink, except in wartime. The children worked on their notebooks, bringing information on the Constitution up to date.

Science.—The children were moving excitedly around a table where the teacher sat. The teacher moved wires from dry cells to poles. Two girls held up posters with directions and diagrams labeled *Circuit—Open and Closed*, *Knife Switch—Open and Closed*, and *Electromagnet*. The teacher tested many materials to see whether they were conductors or nonconductors. On the wall hung a partially completed poster headed *How Do We Make Our Slave Work for Us?* (The "slave" was electricity.) A section of the poster showed homes and travel before and after electricity.

Music and reading.—Several children sat on chairs in the front of the room, holding large posters (made by a "very gifted child 2 years previously"), which showed names and pictures of string instruments: violin, viola, cello, and double bass. The children discussed the different tone qualities of these instruments and also mentioned other strings—harp, ukulele, mandolin, lute, fiddle, and lyre. The string-instrument group of children vacated their chairs and a group holding posters showing names and pictures of woodwinds—flute, bassoon, oboe, French horn, clarinet, piccolo, and tuba—then moved to the front of the room to sit on the chairs.

The moment had arrived to turn on the classroom radio for the educational broadcast. "It is good to surround yourself with music," said a voice, which went on to describe and play several woodwinds, calling attention to the muted tones of the trumpet and inviting anyone having such an instrument to produce these tones. The program ended with a band march.

The teacher asked certain children to tell about their wishes in music. One said he was studying the guitar; another, the organ. One said he wanted to play the organ, but it had "so many valves—and was so gigantic."

T—*You don't mean "gigantic"—"magnificent," perhaps.*

C—Oh, yes, that's the word I meant.

C—I am studying piano. I heard Bernstein.

C—We don't like just rock-and-roll. We like classical music too.

C—I heard Bernstein at Carnegie Hall. He was wonderful. My brother plays the piano. My mother can hardly get him to go out and play because he practices and listens to records all the time.

C—I can bring any Beethoven records you want. We have them all. Just name a few.

C—May I tell about the book I am reading? It's not music. But it's good. It's *Beyond the Solar System.* (He described it.)

C—I'm reading about Theodore Roosevelt.

C—I'm reading about Paul Bunyan.

C—I'm reading *Pioneers of the World.*

C—I'm reading *Let's Look Inside Your House.* I learned a lot.

T—*These models on the table are yours, aren't they?* (Models of doorbells, lights, etc.)

Next day the children brought their instruments so that others could hear them play. All showed enthusiasm.

Physical education.—Boys and girls, with evident satisfaction, did square dances together—the Virginia Reel, the Texas Star, and others.

Resources.—After school the child hostess took the visitor over the room to show the "fabulous resources." A file held pictures and mimeographed pages about "practically everything." She pointed out library shelves filled with hard- and paper-back books and library cards, which she explained were kept up by the children. She showed the individual reading-progress records, notebooks, original poems and stories, plays, maps, and other things useful in teaching.

The teacher said trips were already planned (or would be) to the public library, railroad station, children's musuem, science museum, airport, and aquarium, as well as to several other local points of importance, and to a farm.

**Homogeneous class.*

Teaching-Learning Situation No. 2*

Social studies.—This large classroom was a center of activity. A big table near the door held many articles which the teacher had brought from Mexico. Among them were vases, trays, a serape, a hat, a dress, straw mats and baskets, and tin objects of a purely decorative nature. Chalkboards were covered with outlines and plans, a bulletin board was hung with the children's booklets, and easels held plans, displays, maps, and notes. The bookshelves were amply stocked with varieties of readers, social studies and science books, and magazines.

On an easel hung a poster reading:

Requirements for Reports

An attractive cover pertaining to the subject
Title page
Tables of contents
Outline of material to be covered
The report
Personal test
Bibliography
Author's name, title of book (underlined), publisher, date

On a bulletin board was an outline, *Study of Mexico*, made cooperatively by teacher and children from 13 questions which the children themselves had raised. The latter were now working in small groups, using a wide assortment of materials, to fill in the details. There was great difference in quality and quantity of the facts which the children selected. Two boys, far ahead of the others, said they planned to read books about Mexico until others were ready to discuss the outline.

The following words appeared on a chalkboard:

What do these words bring to your mind?

adobe
frijoles
hacienda
Ixtaccihuatl
mestizo
peon
Popocatepetl
rebozo
serape
siesta
vaquero
tortillas

Carefully imitating their teacher, the children pronounced all the words in Spanish. Some had listed many more Spanish words in their notebooks.

Language arts.—Booklets made by individual children were displayed on a bulletin board. Pertaining to such themes as Our Earth, Mother Earth Herself, Meet the Earth, Earth, The Earth's Geography, Black Beauty, Secret Garden, The Crusades, Heidi, the booklets showed a wide range of ability in content, organization, style, appeal, artistry, and imaginative quality.

Science.—A bulletin board held a chart reading as below:

The Six-Legged Class—We Want to Know

Why are insects sorted into class and order?

What materials could you use on an insect-collecting field trip?

What is the difference between a collecting jar and a killing jar?

How will improper handling injure butterflies and moths?

How are butterflies banded?

For what reason do aphids sometimes develop winged generations?

Suggest one point of interest about the following: katydids, aphids, hellgramite, water-strider, monarch butterfly, blackwinged damsel fly.

What features of the dragon flies help to identify them?

In what way are the hunter's butterfly and the painted lady similar?

Name three reasons why insect collecting has value.

A shelf of books from the library presumably held the answers, and children showed eagerness to get started.

**Heterogeneous class.*

Teaching-Learning Situation No. 3*

Reading.—The children went to the library to read and get books. Two children checked the books in and out and the librarian helped the children select books from the shelves. The class study was *The Westward Movement* and the children were expected to choose books to use in the classroom. Several groups were seated at tables in teams selecting book portions to make into a play. One group, interested in the subject of *Time*, was pursuing this in reference books of several sorts. When the children were called to return to their classroom, this group asked for more time to work.

The librarian said that all the children of this particular class were "very bright" and voluntarily read a great deal, but that doing this is not invariably a characteristic of very bright children. Some require much motivation. Books about animals, adventures, and families were among those chosen by the children in this particular class for their independent reading.

This library has 8,000 books, serves the elementary school alone, and is spacious and simple. Shelves are labeled with the classifications, History, Biography, Science, Health, Reference, Literature, Folklore, Legends, Stories, Fiction, Art, and a few others.

Back in the classroom, the teacher stated that the children read aloud stories written for younger children. When half the class approves, the reader may go to a lower grade to read to the younger children there.

Social studies and language arts.—The teacher read aloud several stories that the children had written to explain reasons why settlers went west. These were all well written; several were humorous. One story concerned settlers going from New England, one from Virginia, and one from Charleston.

Another story presumed to have been written by "an old maid of 31 who looked like a pickle," and who was going west to get a man. This produced much laughter. The story about settlers from New England also was funny, featuring Mr. McGillicuddy; his wife, Gertrude; and his daughters, Petunia and Myrtle. The child writer queried all the family about why they were going, showing reluctance to agree that any reason to leave home was a good one. He ended with: ". . . and away they went. In fact, I think I may go myself." This nearly created a riot of mirth.

The teacher led the children in a discussion of why people went west and she placed their ideas on the chalkboard. These added up to "more room, better soil, cheaper land, better trapping and hunting, and gold."

In a conference between the visitor and teachers of the school, the teacher in question said that one of the greatest differences, apparent to her, setting the "gifted" apart from others, is the ability and desire to do creative writing. "They never tire of it," she reported. "I can hardly keep up with them." Other teachers in the conference group, however, thought that some who do not express themselves so easily are also "very gifted."

**Homogeneous class.*

Teaching-Learning Situation No. 4*

Social studies and art.—The class was working on the theme, *How We Live Depends Upon When and Where We Live.* A mural was in process: *Where—Midwest; When—1783–1959.* A committee explained they were going to study changes in houses during that period and the influences bringing about the changes. They also said they had exhausted all their resources and would have to go to museums, the library, and other places. They needed information about central heating and about people in our times. They had been advised to consult the Readers' Guide to Periodical Literature to locate more material.

The children would also make floor plans, perhaps a big book or a round picture display, or animated cartoons. They were thinking, too, about how they could show the interior of the house they were making—perhaps they would hinge the roof.

The bulletin board reflected study of *News of the Day*, *Our Creative Moments*, *and Our Plays*.

Public Schools, Winston-Salem, N.C.

Children write, direct, and produce plays.

Public Schools, Winston-Salem, N.C.

They also review school plays for the city newspaper.

Science.—On a bulletin board was a huge chart having a skeleton outline like the following:

Items		Planets								
		Earth	Jupiter	Mars	Mercury	Neptune	Pluto	Saturn	Uranus	Venus
Diameter										
Distance from sun										
Length of	day									
	year									
Miles in 1 second										
Satellites										
Weight of a boy										
How high boy can jump										
Other facts										

The actual chart, as seen by the visitor, was partially filled in.

On another bulletin board were pictures showing various rock formations and below, on a table, many specimens. The rock study was in its second year.

The teacher held up a series of photographs taken through a telescope, asking for identification. The children identified Mars by "canals and the polar cap." Another photograph led to guessing: sunspot, comet or a shooting star, earth going around the sun, moon going around the earth, the North Pole. The teacher held up some pictures containing "hints." Almost at once, a child volunteered, "The Big Dipper," which proved to be right. The teacher then asked whether the camera taking the picture had been set all night. "No," was the response, "the lines would be complete, but these are broken." Discussion led to the conclusion that the camera had not been set for either 12 or 6 hours—perhaps for only 2.

Another picture was identified as Higgin's comet.

A boy explained how he was making the various planets out of string, paper, cotton, and clay. Jupiter was complete, all but the rings. He was now working on the earth. Someone suggested how he could make the rings out of cardboard.

The children then went to their various projects. The teacher explained to the visitor that she makes suggestions for basic projects with the understanding that the children may do these or "any others they agree are equally valuable." She also explained that she often offers such an experience as the one with pictures in order to challenge initiative or creative thinking. Those who are unable to think creatively learn from the others.

Art and shop.—Some of the children were working with handtools, and three girls wearing masks were using power tools. Many were molding with clay—animals, vases, bowels. Several boys were weaving baskets. Each had his own project, the teacher said. It was apparent that the children's behavior was very permissive, yet all were working.

**Homogeneous class.*

Teaching-Learning Situation No. 5*

Health and physical education.—In this school careful individual records are kept on all aspects of the children's development. At the time of the observer's visit the children were being weighed and measured. This completed, they went out to the playground where a young student-teacher, a member of the local university football team, gave them—boys and girls together—a lesson in touch football. (No tackle football is allowed here, either in elementary or secondary school.) They enjoyed this rugged play, putting all the energy they had into it. Each class, it turned out, has 30 minutes of such "structured" physical education daily and in addition, 30 minutes of "free" play. Both the fifth and the sixth grades also have swimming once a week.

During their free play period, this class chose "Sitting Ducks," a great favorite, providing chasing and being caught, and long slides on the gymnasium floor.

Reading.—Most of the children went to the library where the student librarian read a story to them. All were interested, the brightest as well as the slowest. Facial expressions and gestures showed contentment and appreciation. A few, more interested in books they were reading, remained in the classroom.

Spelling.—The teacher selects 50 words from The Buckingham-Dolch Word List and has them mimeographed in individual copies for the children. Most of the children study all the words; some, not all. When the observer was present, they were helping each other and the teacher was moving about helping different children individually.

Arithmetic

The children were working in small groups to solve a list of problems. The teacher explained that she composes the lessons, basing them on interests already discussed. Problem content is derived from the children, from her own knowledge, and from her shelf of professional books on mathematics. Among those on the shelf at this time were the following:

Dudeney: *Amusement in Mathematics*
Heath: *Mathematics and Magic*
Meyer: *Fun With Mathematics*
Smith: *Number Stories of Long Ago*

Music.—Twenty-four of the 29 children went voluntarily for a violin lesson offered by the high school music teacher. They were all beginners, although some had studied piano. Already great differences in ability were becoming apparent.

German.—The teacher, a German girl, offers German to children of grades 5 and 6 on a voluntary basis. The work consists of speaking, simple reading, and singing. More than two-thirds of the children take it, and some are in their second year of study.

Social studies.—The children and the teacher had decided to study the United States and each child had chosen a State. The teacher commented that the boys and girls wanted *individual* responsibility in this, although they do many things together. Some had withdrawn for concentrated study and some were in pairs, helping each other.

An outline, cooperatively built, indicated that they would be expected to report on location, population, size, climate, and "other things." Encyclopedias (on a mobile bookcase) were being used by more children than were textbooks, although there was an abundant variety of the latter, authored by different writers. There was also a large selection of trade and reference books.

One child asked, "Shall we round off numbers of population or give the exact number?"

Another was troubled because, "It says here that 'Arizona is the newest star in our flag.' This isn't true now, is it?" She looked at the date of the book's publication and referred to a map showing dates when States entered the Union. "I guess Alaska and Hawaii are too new to be on the map," she concluded.

In the adjoining workroom were a piano, tables, chairs, two typewriters, a woodwork bench (with vises, tools, and a tool closet), bookcases, and a mobile case for art materials. On a bulletin board was a poster which read as follows:

Fuel Chart

Solid fuels	*Liquid fuels*	*Gaseous fuels*
Coal	Charcoal	Producer gas
Wood	Briquettes	Coal gas
Peat	Gasoline	Oil gas
	Kerosene	Natural gas
	Furnace oil	Acetylene gas
	Alcohol	

**Heterogeneous class.*

Teaching-Learning Situation No. 6*

Reading.—The children were discussing with the teacher the types of reading they would be doing during the following weeks, while the teacher simultaneouly wrote notes on the chalkboard.

Poetry—narrative and lyrical
Novels, and some science fiction
Short stories by O'Henry and Washington Irving
Essays by Washington Irving
Satire by Mark Twain—especially *Tom Sawyer* and *Huckleberry Finn*

A child said, "Poe was a lyrical poet. He wrote *The Bells.*" "He uses symbolism," said another.

Science.—Teacher and children sat on the floor in the front of the classroom to "launch a unit on electricity." The teacher had a light bulb, a dry cell, and a night switch. A boy read the strength in "volts and watts," and they discussed negative and positive charges. The teacher flashed the light off and on as they talked about circuits. "Short circuits" brought up the problem of what to do and what not to do at home when there seems to be a short circuit.

Health.—Discussion involved the heart and circulation. A child explained a stethoscope, ending with, "The doctor holds it on the apex of the heart." All the children had excellent notebooks, each made individually.

C—We studied the brain, too, and the fluids in the body.
We know about lymph. It lubricates the joints.

C—We learned about worms, too.

T—*What did we learn about them?*

C—That they can be parasites in the intestines, and eat up all our food so that we keep eating but don't get strong. Pork should be well cooked.

C—We learned about cleanliness in restaurants, that dishes should be clean, that hands should be clean, that hair should be pinned up, and that everyone in the kitchen should be well.

C—We learned about health heroes. Some of them can be out in front where people see them, and some can be on the sidelines making it possible for others to go ahead.

T—*What is a hero?*

C—Someone who is a hero to you might not be to another person.

C—Lincoln is a hero to some, the Negroes, for instance; and not to others.

C—The South liked Lincoln, but they liked slavery more. No man should be another man's slave.

C—To one, a mountain climber might be a hero; to another, he appears foolish.

C—The X-ray was discovered through a mistake. This person is now a hero. (Telling the story, he used the words "carpal" and "phalanges.")

C—The man who discovered penicillin is a hero. (She told the story.)

T—*Many people are becoming immune to penicillin. What does "immune" mean?*

The children entered excitedly into a discussion of fly immunity to DDT, and other immunities.

**Homogeneous class.*

Teaching-Learning Situation No. 7*

Social studies.—The teacher introduced the work by saying, "You said you each wanted to study a State when you had finished with your present work. Have you decided what State?" When each had named one, he continued, "What do you think we should find out about each State? When it was admitted to the union? What its education is like—the problems it has in education, like integration and educating Indians on the reservations, and the Government? The old laws, such as the blue laws? Asked to tell what States they had traveled in, many of the children, it developed, had traveled to both coasts.

They now settled to their individual projects.

The teacher told the observer that the class had previously taken a look at the earth's formation, changes, and surface, and the characteristics of a geographic area. From there, a study of political divisions as shown in States carried out a natural sequence.

As to ways of working, they had begun by taking responsibility for individual projects; recently they had assumed group projects, but each with an individual responsibility. "Reports have grown," said the teacher, "in thoroughness and accuracy, in attitudes and enthusiasm. Some now ask when they come to school, 'May we study now?' "

Language arts.—Later in the day during a long study period, many small groups and some individuals were at work. One group was engaged in writing a play about communism and another about dictatorships. Two new children worked on individual projects, learning incidentally the ways of independent study. A boy was writing a dialog for himself as ventriloquist and for his stooge. Others were writing animal stories.

Art.—In the large crafts room, fifth-grade children were modeling with clay, painting, using crayons, and working with wood. A refugee boy was making a picture. The teacher showed the observer the succession of his paintings: the earliest ones were muddied and vague, the later ones increasingly precise and clear. "We don't yet know what his ability is," said the teacher, "but we think he is probably a very bright boy."

A girl had painted three similar heads of different sizes. Turning to the teacher, she said, "Now I want a BIG piece of paper." Receiving a piece 4 feet by 6 feet, she proceeded to sketch a mural which promised to be a dynamic, bold portrayal of human figures being cowed by a dominating demon.

It was readily apparent to the observer that in this classroom both resources and encouragement were at work to draw forth individual expression.

**Heterogeneous class.*

Teaching-Learning Situation No. 8*

Social studies.—A hostess and host greeted us and escorted us to chairs. The hostess was in a Japanese outfit, including *geta.*

The unit was *Telling Time.* The children explained their individual projects: sand clock, waterclock, gravity, sundial, marked candle, rope, Nuremburg eggs, gnomon (tower with sun on it), fakir sticks, hourglass, milk clock, modern clock. Each project involved a report and an explanation or diagram. A boy told of reading a publication called *Book of Experiments* and of putting an egg into a bottle. Another told of taking an electric clock apart and putting it together again. He explained how he had done it.

Around the room hung posters made by the children, showing many kinds of clocks. Clock models and a collection of clocks used today in Europe and America were arranged on tables.

The children gave an original skit concerning the invention of the waterclock; and using sticks, played an original melody that represented clocks ticking.

Discussion led to the calendar. The children's questions, listed on a poster, were read aloud.

Why are there 7 days in the week?
Who made the names of the month?

Why is there a leap year?
Why are days called days?
Why does a year have 12 months?
What kinds of calendars did the ancients have?
How was the calendar made?
How do you explain the language of the calendar: year, month, day, decade, century?

Five committees were formed to study the questions. Some of the children looked up names; some filled in worksheets; some used encyclopedias and others, tradebooks. The teacher said that they were to be sure to take important notes—in phrases, not sentences.

They were to look up the following:

1. Meaning of day, solar year, month
2. Ways used by Babylonia, Greece, and Egypt, to measure a year
3. Different men who improved the calendar
4. Others ways of measuring a year
5. Meaning of B.C. and A.D.

A group worked with the teacher looking at a strip film, *The History of Our Calendar*. Another group read to find out about the source of the month. (Question from this group: Is the Chinese week a 5-day week?)

Music.—The teacher moved about helping each group. Finally time was called. The teacher asked, "Have you ever been out in the moonlight?" Most of them had been—"with my mother"—"last summer at camp," and so on. The teacher introduced *Clair de Lune* with "Listen to the music of the moon over the water." The children listened with interest, and asked whether they might make pictures sometime.

**Heterogeneous class.*

Sixth-Grade Experiences

Teaching-Learning Situation No. 1*

Typing.—An entire class takes typing daily under a special teacher. At the time of the observer's visit, the children were copying complete pages of manuscript, using carbon and learning how to erase. All were enthusiastic; some showed high skill, while others showed little promise. Occasionally the children would attempt original work such as typing a play they had written. At such times, according to the teacher, they would give considerable attention to spelling and punctuating correctly.

Language arts.—A child came to school saying breathlessly, "The play's next week. We'd better get busy."

"Well, get busy," said the teacher. "Where's the committee?" Whereupon the committee tore out to the front office to cut the stencils for their own dramatic script for a production of *Tom Sawyer*. In about an hour and a half, they were back with the pages, ready to assemble them.

Later, as they read it together, they were not satisfied with the ending and so they revised it.

Current events.—It was election day. The children had just followed a voter through the process of voting, had stood inside the booths, and were now back in the classroom. One child had a list of the nominees and brochures describing them, provided by the League of Women Voters. They discussed which positions were at State, county, and local levels; the responsibilities of each position; and which were nonsalaried. The children made many comments about school board nominees, one drawing a laugh by exclaiming that Mr. ——— would probably be elected because "he doesn't like fancy things or Iowa tests."

Issues were discussed, vocabulary words noted (*franchise*, *prothonotary*, and others), and the children introduced a lively give-and-take on the minimum age of voting.

Next day they reviewed the election results. Eventually the teacher asked, "What happens in the United States when the election is over? Does the loser have to go away somewhere? Is he punished? Does he seek revenge?"

C—They shake hands and say how happy they are.

T—*Is this evil or good?*

C—It doesn't seem honest.

C—It's evil if they just want something.

C—It's good. Then they work together.

With that the discussion turned from state to county and local matters of interest to the children.

Social studies.—The room was full of activities, based chiefly on Gunther's television program, *High Road*. The children had undertaken a brief study of Latin America, Vietnam, and India. Each had made a notebook about Mr. Khrushchev's tour of the United States; several of the notebooks contained original political cartoons. These, said one of the boys, "had to explain something." Many had made notebooks about the various countries studied. No two were alike, and they varied greatly in every possible way: in artistry, breadth and accuracy of content, organization, style, and appeal.

A bulletin board held a map of Vietnam, a picture labeled "Nguyen Thuong Chi, Our Friend," and pictures and accounts of his activities in Vietnam.

Since the month was October, Halloween month, the children had made masks similar to those used in Mexico. Glowering from a high bulletin board were several outstanding productions having a degree of authenticity, for they were the work of a committee headed by a child "anthropologist" who was studying the Maya culture. Present plans of the class were to make masks to use while telling stories to younger children.

This class was also interested in maps, a fact attested by the wide array of maps and charts in evidence on bulletin boards and on tables.

Public Schools, Allentown, Pa.

Sixth-graders act out stories for younger children.

Music.—In general, the children in the class under discussion enjoyed music. They had brought to school some recordings of operas—a favorite was *Porgy and Bess*—as well as rock-and-roll. Tastes varied widely, but the children were tolerant and interested in each other's selections.

**Homogeneous class.*

Teaching-Learning Situation No. 2*

Arithmetic.—The teacher said, "Yesterday we were exploring fractions: $2 \div \frac{3}{4}$. Who knows the old way of solving this?"

C—$2 \times \frac{4}{3} = \frac{8}{3} = 2\frac{2}{3}$.

T—*Yes. There is a new way, too. Let's consider:*
$\frac{7}{8} \div 2 = \frac{7}{16}$. *If we find the common denominator, we can divide fractions* (explaining as she worked):

$2 \div \frac{3}{4} = \frac{8}{4} \div \frac{3}{4} = 2\frac{2}{3}$.
$\frac{7}{8} \div 2 = \frac{7}{8} \div \frac{16}{8} = \frac{7}{16}$.

(She then dictated some problems.)
What number divided by 8 gives $6\frac{1}{2}$*? . . . A bicycle was reduced to four-fifths of its original cost. It now costs $32. What was the original cost?*

Problems were added about taxi fare, games won and lost, and recipes; and the teacher encouraged "using no pencils" and "finding easy ways." She used the following example:

T—*A recipe calls for* $\frac{3}{4}$ *cup of sugar. Mother wants to make half of the recipe. How does she find out how much to use?*

C—$\frac{3}{4} \div 2 = \frac{3}{8}$.

C—I always just double the denominator.

T—*Does it always work? Try it out.* $\frac{1}{3} \div 2 = \frac{1}{6}$ . . . $\frac{1}{4} \div 2 - \frac{1}{8}$.

C—Yes; it does.

T—*In mastering fractions, we have learned how to divide a whole number by a fraction* ($2 \div \frac{1}{4}$), *or a fraction by a whole number* ($\frac{3}{4} \div 3$). *In each case, we learned how to use mixed numbers, too.* (Children indicated that this was true.) *Now:* $\frac{3}{4} \div \frac{1}{8}$. *How do we find this? Can we find interesting problems dividing a fraction by a fraction? They are rare, except in science. But we must know how to do them.* (She put the following on the board.) $\frac{1}{2} \div \frac{1}{4} = 2$ . . . $\frac{7}{8} \div \frac{1}{2} = 1\frac{3}{4}$ . . . (She then diagramed the fractions by means of a circle.)

T—*Can we do it without a diagram?* $\frac{7}{8} \div \frac{4}{8} = \frac{7}{4} = 1\frac{3}{4}$ . . . *The rule is to find the common denominator and divide the numerator.*

C—It's the same old way. Now we can do all our examples the same way. (Excited, a little relieved.)

T—*Let's put the rule into our notebooks. The rule applies to all division of fractions and mixed numbers.* (She asked a child to dictate the rule.)

Reading or literature.—A girl showed a chart illustrating *Curtain Call* by Leeuw. She recommended it for girls, and when the teacher asked whether some boys might like it, the girl said, "Only if the boy is very interested in theater work."

A child reading *The Diary of Anne Frank* said she liked it, explaining, "She's a Jew—she was hiding from the soldiers." Other reports included: *Kidnapped*, by Stevenson and *Sea Song*, by Allan Cunningham.

T—*What do you watch for in reading a poem?*

C—Appeal to the senses, alliteration, metaphor (the teacher listed these on the chalkboard), simile, thought told in a poetic way, reverberation (immediately when these words were pronounced, several turned to their dictionaries) or repetition, descriptive language, and rhythm.

T—*Let's turn to the* Sea Gypsy *by Hovey.* (The teacher read the poem several times, the children pointing out examples of the qualities making it a poem. She then assigned Mansfield's *Sea Fever* for reading and study.)

The children turned to individualized reading, some to basic readers and some to library books. The assignment was to find a good topic sentence.

Science.—A child showed a beautiful looking chart of the solar system, the relief depicted by means of rope pasted on cardboard. The facts were confused, however.

C—If you can't read your chart accurately, you can't expect other people to—you should do it scientifically. (This was not a personal reproof but rather more of a generalization, and the maker of the chart seemed to take it in stride.)

T—*Check your chart and bring it in again.*

A child showed a poster he had made depicting the earth's axis, a work both beautiful and accurate. The children admired it, saying, "It has esthetic quality," "It has clarity," "It has accuracy."

Another child showed his picturization of phases of the moon. The earth was centered, and the sun painted at one side. The children admired it.

Still another child displayed his representation of a constellation—stars pasted on cardboard. The child volunteered, "My neighbor is making a book of the constellations and you can see what the sky is like each month."

Later, the teacher showed the observer a pile of projects in various stages of development. "There's too much to put up in the room," she said.

She gave a homework assignment to find out what scientists believe about Mars, and referred the children to *Junior Scholastic*.

Creative writing.—A child read an autobiography which she called *Meet Me*. Later, the teacher handed the observer a stack of autobiographies, including one called *Monday* and another *Sense of Humor*. These were intriguing, enjoyable essays.

T—*We have chosen the theme "This Gift-Giving Season." What are some words that describe how you feel when you receive gifts?*

C—Jubilant, flattered, thrilled, excited. (Various children.)

T—*When you give gifts?*

C—Proud, concerned, impatient. (Various children.)

The class settled to writing, and the teacher moved from one to another speaking about feelings, metaphors, similes, contrasts, and comparisons.

Social studies.—The teacher reminded the children, "Tomorrow we will share our social studies committee reports. What points do we need to keep in mind?"

The children volunteered:

Does it fulfill the assignment?

Does it avoid duplication?

Is there something to show?

Is it well organized?

Every member of the committee needs to have good background information so all of them can answer questions.

The whole committee must read on the whole problem.

Environment.—The room environment was especially inspiring. Finger paintings provided color, and many of the posters dealt with points specifically emphasized by the teacher. Some examples follow.

A Committee Doing Research—

Understands the assignment.
Decides what it wants to do.
Uses many sources of information.
Pools information.
Discusses the problem.
Plans how to report.
Finds answers when questions are raised.

Some Free-Time Activities—

Read a library book.
Finish incomplete work.
Write original stories.
Work on your unit.
Write poems and jingles.
Make up riddles, tests for social studies.
Prepare crossword puzzles.
Become an expert on a special topic.

For Effective Creative Writing—

Pick a topic you like.
Make the first sentence count.
Stick to the point.
Have every sentence move the story along.
Show human feelings and qualities.
Try humor.
Use colorful words.
Lead to the climax.

Are You Following the News?

What happened?
When—where—why?
What is the background?
Show on a map.
Call the expert for details.
Read daily—listen to TV.

Similar posters showed what reporter, audience, and chairman do.

**Homogeneous class.*

Teaching-Learning Situation No. 3*

Current events.—The children were preparing to read an article about communism in *Junior Scholastic.* They wrote the words "Communism" and "Communistic" on the chalkboard.

T—*What ideas are involved in these words?*
They put people in jail. (This was echoed by several children.)
C[1]—Russia. I don't like them because they don't allow any religion.
I think of the freedoms they don't have—freedom of the press, of arts. They put people in jail.
(This was echoed by several children.)
The poor live in slums and the rich in big houses.
They have the most cruel and unwanted government anywhere.
They do not keep their promises to other countries.
They torture people in prison camps.
People can't vote for the leader they want.
The people live in fear.
In East Germany, there is no freedom.
There is no free will behind the Iron Curtain.
The people work hard, but they have to give their money to the government.
They put up a false front.
The rulers are like giants: They say, "I like this house," and they take it.
The people are like blind men in quicksand: drawn in by false ideas and can't get out. (This was from a cartoon and brought on a discussion of cartoons.)

The teacher said, "It seems that most of us think about loss of freedoms—of one man ruling over another, and of people wanting to vote. The article is in three parts: Why Study Communism?, Where and How It Began, What Is Communism and Where?

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[1] The separate remarks were made by different children.

"We'll divide into two groups. As we read, this group will watch for map references, and this one for pronunciation and meanings of words. Let us all watch to see if the ideas we have are true or false."

All the children seemed interested and set to reading at once. Some finished long before the others and turned to other work while they waited.

The discussion began. To focus it, the teacher asked: "Did you find anything that verified or contradicted your ideas?"

A child read the definition of "Communistic" from the dictionary: ". . . goods held in common." They talked about Marx and Lenin.

"It isn't fair to have only one candidate on the ballot," said a girl, and there was hearty concurrence.

Science.—There was unusual pride among the children who, during a recreation period, called the observer's attention to a feeding experiment in process in the classroom. The children had made cages for two white mice, mixed food for them, and recorded changes in weight. "We even converted the amount into percentages," they said. "That's because we're studying percent. We're studying how their behavior changes, too."

**Heterogeneous class.*

Teaching-Learning Situation No. 4*

Social studies.—The room was full of artwork illustrating Where Our Civilization Came From, How Our Civilization Progressed, Using Fire, Making Tools, Building Homes, Raising Food, Making Clothing, Progress of the Wheel, Development of the Boat, Development of Tools, Government, Progress of Lighting, and Living in Our World Today.

A world map, rolled down over a section of chalkboard, showed strings leading to certain localities on the map from brief notations on the chalkboard identifying certain recent happenings in those localities—happenings about which the children had been reporting. Nearby hung a poster to serve them as a reminder of what to put into a news report: "News Report: What? Who? How? Why? When? Where? Result?"

**Homogeneous class.*

Teaching-Learning Situation No. 5*

Social studies.—Ronny's father, a professor of political science, had come to give a talk entitled *The Soviet Union in War.* He began with a background which he called "Ideas in Communism." He told how design had been found in nature: the laws of gravity, movement of the heavenly bodies, circulation of the blood. Later, some people, particularly Karl Marx in the 19th Century, began to search for laws in the history of people.

Marx asserted that he could explain the laws of the past, present, and future, and many believed him. The Communist Party came into being around Marx's ideas, with a promise of "perfect freedom" in the future.

The Communist leaders claimed to know what is best for man even though man may not know what is best for himself. They imposed their ways, but said they intended to move toward "perfect freedom:" no laws, no government, no police.

In 1917, there was a revolution in Russia. After that, although the rulers promised freedom, they took over power. There have been no free elections, because the leaders claim they know best who ought to rule. They organize people in order to lead them more readily.

The children listened attentively, and when invited to contribute information, began to tell what they had read in newspapers and magazines and to relate experiences that friends had had in Russia. After that, they asked the speaker many questions. The following samples show the range of the children's interests:

> Do they really believe they can see the future, or is it a way of deceiving the people?
> Are schools different from ours?
> Could the United States buy from Japan and sell to Russia?
> What do the people think of science inventions?
> How are Nazis and Communists related?
> What would happen if a candidate for election lost?
> Do the secret police wear uniforms?

The children were pursuing individual and group studies related to the theme, "The Industrial World in War and Peace." Seven major questions had appeared. The hum of work filled the room: the children were intent on their self-assignments.

The teacher showed the observer a file of questions asked by the children at various stages of the study, together with criteria they had worked out from time to time:

What Makes a Good Study?

Something that everyone can help with.
Something we can work hard on.
Something for which there are many good materials.
Something which ties in with science, art, and music.
Something we will be interested in for a long time.

Evaluation of Art Projects

Have I done this before?
What did I learn from it?
How well did I follow through on the project?
Did I use suggestions?
Have I been self-sufficient?

The teacher went the round of the committees and said, "No committee is ready to report. That means you have a half-hour more for your project, makeup work, or your report to parents—whatever has priority for you."

Later, a make-believe television program called *You Asked the Question* was put on by a panel of six children, three "men" and three "women." The moderator introduced each as Professor ———, the guest speaker being the famed Professor ———.

Stating the question, and the name and address of the sender, the moderator led the discussion in a lively, free manner.

The questions and replies in brief follow:

1. *Do wars affect colleges?*

   The guest speaker said, "May I speak to that? There is a loss of teachers to industry and to the armed services, fewer textbooks are available, scientific instruments are hard to get, and students go to the army and to work to earn money."

2. *Do students get enough education?*

   Well, some leave school and go to war. Because teachers leave, too, education is not so good as in peace time.

3. *Do civilians get paid enough to feed their families and provide shelter for them?*

   Yes; if they are working. A soldier makes $40 a month.

4. *Do people have enough clothing?*

   In the United States, but not where the war is being fought. There, people are lucky to have any clothing.

5. *Are food prices high?*

   Yes; soldiers need food and much of it is sent to them. Then, too, there are no workers to ship food, and not so much is produced. There are also economic pressures: food is high because it is scarce. Some foods are rationed, such as meat, butter, sugar, and coffee.

6. *Why don't we have a lot of food in wartime?*

   That question is similar to the other one. It has to go to the army first, and workers are hard to find to raise food because industry takes them.

7. *How does the U.N. work during wartime?*

   That organization distributes food, medicine, and supplies of clothing. They get others to help, too.

8. *What kind of transportation is available?*

   This applies to civilians, I guess. Gas is scarce and is rationed. Those who need it for important business can get a little more from the ration board. I'm not sure about plane travel, but trains are crowded.

9. *Why does the United States fight on foreign soil?*

   To keep communism from spreading and to protect democracy.

10. *Do people get enough food?*

    This is related to other questions. They do in some parts of the world. In some, it is not shipped in, or it may be so high people can't buy it. The poor never have enough.

11. *We will now turn to our guest panelist. Professor———, what country has the best defenses today?*

    I have prepared two maps, one showing world ownership of land (explains) and one showing the spheres of influence (explains) of the United States, British Commonwealth, France, Spain, the U.S.S.R., and the Islamic group. This one also shows some of the radar stations, shiplines, and plane tracks. You can see that the U.S. and the U.S.S.R. are probably the strongest. There are also the secret police, the FBI, and the SAC. It is also clear that the Northern Hemisphere is better protected than the Southern.

    Our time is up. Thank you, panelists, and you especially, Professor ———. See you again next week.

Science.—The special teacher of science brought in 19 statements about energy and its uses. The first three and the eleventh follow:

1. Work done by domestic animals has largely been replaced by the use of muscular energy.
2. Man's ability to combine different kinds of simple machines into more complex machines has provided a way of doing work formerly done by muscular energy.
3. The increased use of energy has made people less dependent on each other.
11. The way people live and group themselves is affected by their use of energy.

The children read the statements aloud without comment; then groups of two or three children were formed to select one statement, correct it, and produce evidence to support the correction. A group changed No. 1 to read: "Work done by animals has largely been replaced by the use of mechanical energy." For proof they offered the following statements:

Animal energy is muscular energy.

Animals plowed the fields; now tractors are used.

We walked upstairs; now there are elevators.

Boats were moved by animals or oars; now they are moved by water power.

Grain was ground by animals; now it is ground by motor power.

We pumped water by hand; now we use motor power.

No. 11 of the 19 statements proved to be difficult. The children said that energy makes man independent in some ways and dependent in others. It depends on how you look at independence: in work, in the use of consumer goods, or what else. Finally they decided that the topic needed more study.

Music.—The children went to the music room, where the special teacher had them sing *Jacob's Ladder* and *Deep River*. They listened to Marion Anderson's record of the latter and seemed deeply appreciative. "We will continue with our attempt to see through music how people feel about things," the teacher said.

The period ended with the children's singing a song which they had composed.

**Heterogeneous class.*

Teaching-Learning Situation No. 6*

Better use of staff.—One hundred sixth-graders, having a wide range of ability and including many gifted children, are divided among three homeroom teachers. An additional teacher acts as coordinator or facilitator. He assists in tutoring, counseling, making it possible for teachers to counsel with children or parents; in projects, and in many other things. The homeroom teachers divide the teaching, but all work together very closely.

Mathematics.—As the children reported to the homeroom, announcements were made about a skating party and about milk money. Children came in casually; several were late. The teacher was pleasant, but made it known that they were expected to be on time. He then began to teach mathematics.

In response to a question, he put it on the board:

$$\begin{array}{r} .166\frac{2}{3} \\ 6\overline{)1.000} \end{array} = .167$$

After a rapid flow of conversation, a girl indicated by her behavior that she had insight into the problem. "Oh yes, I see—oh!" This exclamation was accompanied by relieved laughter, both hers and that of the child next to her.

So many questions had come that the teacher put on the board: 222.222 and asked what was to the right and left of the point. This led to drill on the "ths" ending, and much mirth as children tried to say it.

T—*You seem to need to look at this again, although we've been through it a number of times.*

C—You sort of know it all separately, but sometimes not altogether.

T—(On board): *Which have I multiplied by 10, by 100, by 1,000?*

A, 37.6∧94
B. 37.69∧4
C. 37.694∧ (After considerable confusion this seemed to be clarified.)

T—(On board:) *Now, what have I done?* Many wrong guesses then a voice timidly, "You divided . . ."

∧037.694
∧37.694
3∧7.694

T—*Yes, which one did I divide by 10, by 100, by 1,000?*

C—(walking to the board) Now just tell us *why* you do it that way. I can see it, but *why* (almost belligerently)?

T—*Turn to p.— in your book.* (He drew a graph of vertical lines with a music liner and put decimals on a scale to the right and left of *one*. He then proceeded to drill on place value. Many of the children indicated understanding as drill progressed.)

T—*What is a whole number?*

(The children tried to guess, and their voices indicated uncertainty.)

T—*Well, we forget; we try to recall, but it is difficult.*

C—(suddenly) Oh, a whole number is the sum of the products of the parts times *one!*

T—*Show us.*

C—(at board) .10
.10
.10
.10

T—*No; sit down.*

C—(went to board, hesitated.)

T—*Write 13,568*

C—(Did so and sat down.)

T—*Could that be 10,000 times one?*

C—Oh, I see. (Going to board.)

T—*Let us see all the factors.*

C—(Wrote as he talked.)

$$\begin{array}{rr}
10{,}000\times1= & 10{,}000 \\
3{,}000\times1= & 3{,}000 \\
500\times1= & 500 \\
60\times1= & 60 \\
8\times1= & 8 \\
\hline
 & 13{,}568
\end{array}$$

C—How does that prove what a whole number is, I'd like to know.

(The teacher called him softly and explained the matter to him individually as the other children turned to their books.)

T—*Can anyone show the number line?*

C—(at board) 1 2 3 4 5 6 7 8 9 10 11 12

T—*What does 8 mean?*

C—8 ones.

T—*Always?*

C—No.

T—*Could it be one more than the preceding number?*
C—Yes.
T—(writing on board)
000000
0
0 0
0 0 0 *Is there any difference in the meaning of these?*
Children—Yes.

Mr. ———'s office had many books on arithmetic, mathematics, forestry, conservation, and other subjects. He said that soon the children would go into research in number use as applied to agriculture, conservation, location, and other areas. Then, in a week of camping and outdoor education, they would interpret what they had been learning. "This opens up new dimensions to children for whom arithmetic seems to have become jaded. Parents, even years after the camping experience, explain how the children still use what they learned in this experience."

This teacher recommended the following readings for teachers:

Fensky, Theodore H., *and others. Arithmetic in Agriculture.* St. Paul: Webb Publishing Co., 1951. 260 p.

Green, Ivah. *Water, Our Most Valuable Resource.* New York: Coward-McCann, 1958. 96 p.

Phelps, Seth P. "When Facts Are Interpreted," *Childhood Education,* February 1950.

He then quietly pointed out to the observer a boy who had consistently scored in the highest possible percentile on intelligence tests. "He has an all-consuming interest in mathematics," the teacher continued. "But the problem is to get him to understand the simple facts. He becomes bored so quickly, yet he does not know the facts and cannot use them. I've seen this over and over with these highly capable children. Bright children should not be pushed ahead; they should not skip grades. It is important that they develop understanding."

Language arts.—The sixth grade was preparing to stage *The Pirates of Penzance.* The teacher was trying to find out what the family attendance might be at the two performances. She said that there would be a rehearsal immediately and assigned work from the board for those not coming to the rehearsal:

Rules for capitalization
Use of apostrophe
Contractions
Spelling—uses of words
Antonyms: black and white; yes-no; wet-dry
Homonyms: their-there
Synonyms: words meaning the same

Before the children settled down to work, they entered into some informal conversation:

C—This doesn't pertain to what we're in now, but I thought you might like to know. We have a dachsund and she had six puppies last night. My mother was up all night with her. She won't let anyone but my mother near her.

(The children were excited, and all began talking at once.)

C—On the subject of animals, I have a cat . . .

C—On the subject of animals, we have a dog and we want to leave it with someone next year until we come back. We're going to Africa in June.

T—*Ann has a dog she wants someone to keep for a year. Let's remember that.*

C—We had kittens Friday night. The usual litter is three, but we had five.

T—*About our murals* (five large ones about David Copperfield), *I'd like to spray them. Who will stop for the spray gun?*

(A child volunteered.)

T—*Let's read one or two of our characterizations.*

(A girl read one about Uriah Heep, using a very fine selection of words. The children gave close attention.)

T—*That was good, Debby.*

C—She told the description, but she could have told what *she* thought.

C—What does "cadaverous" mean?

T—*That word was from the book. Did you put a footnote?*

C—It means ghostly.

T—*What root word does it come from?* (No reply.) *From "cadavre," a dead body. He looked cadaverous. You really ended where you should have begun, Debby. You could have shown changes in him, substantiating your ideas from the book. You should show what you take from the book in a footnote. If you quote, state from where. Is there another one ready?*

T—*I'll read it for you.* (Reads.) "*Why Was Uriah Heep a Villain?*" (She then read the entire paper while the children again gave close attention. The child writer had analyzed causes with much more than ordinary insight into behavior. The family, said the writer, was very poor. Uriah decided to break away, to step up the ladder. He was tired of being poor, but he needed a tool to work out his ideas. Perhaps he was an angry young man, and his anger was converted to meanness. He was a "conspiror." But "poor" is relative; he had a good job, but he didn't have what he wanted. He was not quite honest—he said one thing and did another. The paper ended with a delightful limerick beginning with "There was a young man named Uriah," and ending with "I wish I would diah." The last word was starred, and the footnote said it was a coined word.)

C—That word is "conspirator," not "conspiror," and he wasn't. It means that you plot with a whole group of people and he didn't do that.

C—And there isn't any word "diah."

Author—But I was only making a limerick.

C—That's poetic license—that's all right. It's really very good.

T—*Did she get at the root of Uriah's personality?*

Chorus—Yes!

T—*She showed his humble birth, poverty, and frustration. Now let's turn to our play. Will the props committee go ahead?* (Several went out.) *Here are the pirates' boots. Will the pirates come here?* (She showed them some patterns and said she would cut them to fit and send them home for their mothers to sew.)

Those children not participating in committees worked alone or in small groups on assignments.

A boy asked the teacher why they were using a printed play and prescribed costumes, and why they couldn't do it as they wanted to.

The teacher replied, "But this is a well-known play. The audience will expect it to be done a certain way and the audience must be comfortable. They must recognize the characters."

He turned away, apparently not entirely convinced.

The teacher told the observer that this group had written and produced on closed-circuit television several scenes from *David Copperfield*, using the murals now in the room. She said the school tried to have all children take part in activities.

A child was sent to the library to ask for *Ride With the Sun*, by Harold Courlander, and another similar book, with the idea that the children who had not yet performed would produce one or two stories from these books.

Later that day, a local newspaper column appeared on a bulletin board commending two boys of these sixth grades for their out-of-school venture in inventing and selling "Oatsie" products: cereal, perfume, and a few other things. As an incentive to purchase, they had given out "credit cards" worth five cents each.

French.—The teacher gave a 10-minute oral review to this group of fifth- and sixth-graders who read French fluently. The entire lesson was in French. The teacher dictated questions and children were expected to write the questions and answers in full sentences. Words in English (on board) were to be written in French: salt, cake, milk, pie, meat, store, grocery store, to buy bread, to go to the bakery.

Social studies.—The children were working individually on the following assignments: (1) to write a report of something from a newspaper or periodical, looking up the background as well as the article. (This was a weekly assignment.) (2) "To help define what we mean by a 'civilization,' choose five words from our Egyptian identification list which you think are necessary in order to have an Egyptian (or any other) civilization. Write a paragraph about each, explaining your choice."

Around the room were table models of the Java man, Peking man, Heidelberg man, Neanderthal man, Cro-magnan man, and Neolithic man. All three sections of the sixth grade had been writing three-part stories—Knowledge, Art, Economics—about life in ancient times.

Harpers, *Saturday Review of Literature*, *National Geographic*, *Life*, and other magazines were stacked high, and maps, travel posters, and other resources were in abundance.

The silent, individual work was interrupted only by a stirring of paper, grinding of chair legs on the wood floor, tramp of feet to the teacher's desk or shelf of books, or the subdued voice of the young man teacher in conference, and the mumble of voices which inspired his sibilant "sh-sh." At one point, the teacher remarked, "A dictionary's over there," and a child went to find it. At another point, the teacher went to help a child who was not being successful in his endeavors.

Science.—Each child was conducting five experiments to determine the presence of sugar or starch. Four teams had sets of test tubes, burners, and tongs. Whenever a child finished, he would go to the board and fill in on a paper hanging there:

Name	*Experiment*	*Starch*	*Sugar*
		Yes	No

**Homogeneous class.*

Teaching-Learning Situation No. 7*

Social studies.—The children were studying famous people and the names, which they had suggested, were on the board. Each child was making a choice for his individual study:

Hemingway
Eisenhower
Mamie Eisenhower
Khrushchev
R. McDonald
George Washington
Lincoln
Herter
Nasser
Lindbergh
Rockne
Dickens
Jackson
Twain
Chopin
Bach
Schweitzer
Juliette Lowe
Theodore Roosevelt
Edison
Kipling
Mary, Queen of Scots
John Paul Jones
General Custer
Henry Ford
Robert E. Lee
Samuel Morse
Benjamin Franklin
Carver
Bell
The Curies
Fulton

The children settled to work, each wanting to work alone. They were using many books of an adult nature and many encyclopedias. They were encouraged to use "at least three books," and were required to make a detailed outline preparatory to giving a report.

2

One child (said to be gifted in every area of work), having read three accounts of the life of Bach, was now writing fluently about him; several others were doing as well. Others needed help from the teacher in order to get underway.

Music.—The children formed into three groups to go for instrumental music practice. Horns, clarinets, and strings were offered optionally. Almost all the children were taking advantage of the opportunity. The teacher said some were very talented in music, and some not at all.

Art.—In a room adjoining the classroom the children's art projects were on display: collages made of dried grains, cereals, seeds, commercial soup noodles, pine needles, ferns, sea shells, nut shells, milkweed fluff, and other materials. Here, too, various degrees of superiority showed up in organization, originality and daring, orderliness, and color sensitivity.

Science.—On the walls hung outlines covering an extensive study of trees and a somewhat lesser study of peanuts. The following paragraphs give the substance of these outlines:

TREES

Problems and questions.—A. STRUCTURE AND PHYSIOLOGY: (1) *What is the structure of the roots, stems, leaves?* (2) *How do trees multiply?* (3) *How do trees make their own food?* (4) *What do the rings of a tree tell us?* (5) *Why do leaves change color in the fall?* (6) *How is an evergreen formed from a seedling?* (7) *How do trees grow so big?* (8) *How do you graft branches?* B. GEOGRAPHY: (1) *Why do trees grow where they do?* (2) *Do the same kinds of trees grow in our State and in other States?* C. HISTORY: (1) *How did trees begin?* (2) *What climate did the first tree grown in?* (3) *What are the oldest and tallest trees in the world?* D. PRODUCTS: (1) *What do trees do for us?* (2) *What are the products of trees?* (3) *What causes petrification?* (4) *What uses do we have for petrified wood?* E. IDENTIFICATION OF TREES: (1) *What are the different kinds of trees?* (2) *How can we identify them?* (3) *What are the different fruits of trees?* F. CONSERVATION: (1) *What are the hazards to trees?* (2) *How do trees protect the soil?*

Resources.—*References, biology books, films, field trips (to Saginaw Forest, National Science Building), microscopic slides.*

Means of sharing.—*Film ("The Forest Grows"), reports, charts and maps, slides of structure of stem, leaves, and roots.*

New words.—*Canopy, compound, deciduous, erode, evergreen, foliage, omit, parched, perennial, photosynthesis, timber, variation*

PEANUTS

What peanuts are made of.—*Amino acids, fats, gums, oils, pectoses, pentosens, resin, sugar, water.*

Products of the peanut.—*Meal, instant "coffee," chili sauce, mixed pickles, juices, milk, cream, cheese, evaporated milk, Worcestershire sauce, peanut butter, ice cream, flour, cereal, buttermilk.*

> *Soap, bleach, shampoo, shaving cream, rubbing oil, washing powder, wood stains, leather stains, sawdust, axle grease, ink, dyes, linoleum, plastics, synthetic rubber, metal polish, wood filler.*

Recess and physical education.—The class had a 30-minute structured recess and a 30-minute free play period, daily. During the former, one or more of the following would occur: football, teamball, volleyball, indoor baseball, running games, soccer, trampoline.

**Heterogeneous class.*

Teaching-Learning Situation No. 8*

Current events and social studies.—The children reported on Baltimore in County Cork, Ireland ("place of the big castle"), Ireland's humor, Egypt, Cuba, Switzerland, Venezuela, Spain, Holland, Germany, France, Italy, Greece, Scotland, Greenland, and Iceland. In the process, the relative antiquity of China and Egypt, "William Tell" music, and the art, music, and literature of many countries were introduced by the children.

The next step was to be a study of Christmas all over the world.

Art.—The children were using watercolors and crayons in a highly creative way. As they brought their paintings to the teacher, he said, "Does this please you? Well, maybe Bill can help you—all I want is for it to please you."

Later, as the children wrote poems about winter, they used such words as *starry*, *dark*, *cool*, *freezing*, *bitter*, *windy*, *moonlight*, *starless*, *rainy*, and *gloomy* to describe the night.

They closed the Arts period by singing *Silent Night* in German.

Mathematics.—As one child played the accompaniment, the teacher led the children in a humorous song they had written about arithmetic.

T—*We are Christmas shopping—from catalogs. How else could we shop?*

C—We could go—could telephone—could window-shop.

T—*But we are shopping by mail. Remember we each have $50 from our Christmas savings fund. If we saved $1 a week, that's about what we'd have. If we saved 25 cents, how much would we have?*

C—About $12.

T—*How many people do you have to give presents to?* Children—5, 11, 13.

T—*When there are that many, you have to cut down on the amount you spend on each one, don't you? Well, get out your order blanks and when you are ready, start your letter. What goes into the letter?*

C—Your first choice and second choice.

C—Your order by number.

C—Your check. You write it and sign your name.

T—*Yes; you endorse it. Where do we write the name? Of course, our checks won't be legal, but we'll sign them anyway, just for practice.*

A child turned to show the visitor her account book. It was labeled "Christmas Fund." One page showed "Deposited $50"; another, "Purchases" and "Checks written." The child had sketched in facsimiles of bank stubs and she explained that they had to be kept up to date. "Why?" asked the teacher, and a child answered, "So we won't spend more than $50."

The children went to work. The teacher took half of them to the rear of the room and, working at the board, taught them how to balance by casting out 9's.

```
 425  2)       1560  3)
4309  7)       398   2)
 762  6)0      1407  3)4
3198  3)         59  5)
―――――――        ――――――――
      0              4
```

The teacher then taught them subtraction the same way.

T—*Th[illegible] ways are useful for proving your work.*

C—Ca[illegible]se it in multiplication and division?

T—*Let's see.* (Tried several examples.) *Now go on with your budgeting.*

The teacher took the next group and introduced shortcuts by using the magic number 9. They cast out 9's and added and multiplied mentally.

```
3046  4)
4390  7)
5609  2)4
6741  0)
3258  0)
```

Reviewing the short way to multiply by 100 by adding two 0's to the number to be multiplied (35×100, for example), they learned to use a short way to multiply by 9.

T—*Multiply 9×81.* (Child did so at the board and found the answer to be 729.)

T—*Instead, annex a zero to the 81, making it 810. Now subtract 81.*

C—(at board)

```
 810       114)  1140      574)  5740
 -81       ×9)   -114      ×9)   -574
 ―――       ――――  ――――      ――――  ――――
 729             1026            5166

 438)   43800    125)   12500       9 (10-1)
×99)    -438    ×99)    -125       99 (100-1)
 ――――   ―――――    ――――   ―――――     999 (1000-1)
        43362           12375
```

T—*Can you figure out how to do 98? The clue is 998. 97? The clue is 997.*

(The children returned to their desks and the teacher turned her attention to the group working on the Christmas project.)

T—*Is anyone out of money?*

C—I'm almost out.

T—*Well, we'll check on all this at another time.*

(In another group, children were learning to estimate.)

T—*How big is a foot?* (Children showed with hands. The teacher tested until he found one about right.) *An inch?* (Same method.)

T—*Draw a foot—an inch—on the board.* (He drew a line as he said this.) *How long is it?*

Children—Two inches—3 inches—1½ inches, 2½ inches. (The last guess proved to be right.)

T—*How high is your desk?* (Estimated, then measured and found it to be 2 feet 2 inches.) *How much shorter is that than a yard?*

C—10 inches. I took 36—26.

T—*How long is this room?*

C—36 feet.

T—*How did you find it?*

C—I thought in feet.

C—I thought in yards.

C—I took a window. A window is about 1 yard. There are 10, so the room is about 10 yards.

T—*I am 6 feet tall.* (Standing near the board.) *How high is the top of the blackboard?* (Children estimated.)

T—*How long have I been in this room?*

Children—10 minutes—25—35.

T—*Can you make good judgments about how long, tall, wide? How heavy, the length of time: playtime, worktime?*

T—*What does 27 make you think of?*

C—27 wholes—20 and 7—27 quarters.

T—*How much would that be?*

C—About $6.75.

T—*27 ones; 2 tens; 7 ones; close to 3 tens. 72—? 72=nearer 100 or 200? 150. 150=nearer 100 or 200?*

C—Nearer 200. At least in the store when it's half, it goes to the next whole.

T—*278—nearer 200 or 300? In 1920, the U.S. population was 128,475,623—near what figure? 128,500,000.*

T—*Ties sell for $1.98. I need 3. I have $5. Can I buy them? How did you figure it?*

C—Almost $2.—need $6.

T—*If I see one for $1.79, can I buy 3?*

C—No, still not enough money.

T—*Cookies are 59¢ a dozen. Want ½ dozen. Have 25¢. Can I buy them?*

C—No.

T—*Add 38.49*	*How do you*	*38*
21.08	*estimate the*	*21*
42.79	*answer?*	*43*

T—137+48=137+40+8 or 140+45.

C—Show us how to cancel by 9's.

$$\text{T—}\quad \begin{array}{r} 239 \\ -137 \\ \hline 102 \end{array} \quad \begin{array}{r} \left.\begin{array}{r} 5 \\ -2 \end{array}\right\}3 \\ \hline 3 \end{array} \qquad\qquad \begin{array}{r} 6.40 \\ -.77 \\ \hline 5.63 \end{array} \quad \begin{array}{r} \left.\begin{array}{r} 10 \\ -5 \end{array}\right\} \\ \hline 5 \end{array}$$

Later at a staff meeting the teacher explained that *approximation* has a social as well as a computational use. It is very important. Even kindergartners approximate: too big, too small. There is need to learn rounding off and the convenience of numbers. Some numbers are never exact: rainfall per year, temperature per year, population. Mental arithmetic, he said, is very practical. Charts help:

Cost of Candy

Pounds	8	4	2	1	½	¼
Cost	$1. 28	0. 64	0. 32	0. 16	0. 08	0. 04

Questions based on tables like the following single-line sample help children develop understanding:

Farm Figures

Year	Farms in U.S.	Land in U.S.	Farm animals
1920	6, 448, 000	950, 000, 000	25, 000

Language arts.—Children and teacher turned their attention to the chalkboard where the names "O'Henry" and "Poe" were written.

T—*What is the difference between O'Henry and Poe?*

C—Poe wrote horror stories and O'Henry wrote funny ones.

T—*How do they express themselves?*

C—Through words. (Discussed this.)

T—*Is the principal my "sidekick" or my "colleague"?*

C—Your colleague.

T—*How do you know? What is a colleague"?*

C—Well, I don't know, but even a teacher is entitled to a better word than "sidekick."

T—*How do you learn words?*

C—Listen—read.

T—*Which is the better language: "I done that," "I have done that," or "I have completed the task"?* (On a flannelboard were cutouts of three women: one in dungarees, one in a business suit, and one in evening clothes.) *Which one would be likely to use which statement?* (Discussed.)

T—*Words can be informal, formal, or common and vulgar. I favor the informal. Let's list some words which apply to money.*

C—Grand, greenbacks, lettuce, dollars, coconut, dough, jack, cash, funds, capital.

T—*How do you use these?* (Discussed.)

T—(Led the children to offer synonyms for "friends" and for "information.") *Would you ever need to understand, listen to, or read formal language?*

C—Yes; the Constitution is in formal language. (They turned to the Preamble and tested it by putting it into informal language.)

(A child mentioned a last name and the teacher asked where the name came from.)

C—I don't know. I don't want to go into too much detail, anyhow.

T—*Here is a book that would help. It tells where some names of things and people come from.*

(From *The First Book of Words*, the children read some names aloud: Killjoy, bellhop, rubberneck.)

T—*Those have come from usage . . . Where did most of our words come from?*

C—From around the Mediterranean.

Children—*Panic*—Pan—Greek . . . *Muscle*—"mouse," the name for the ripple of muscle . . . *Humerus*—the upper arm—Roman . . . *Pasteurized*—from a Frenchman's name . . .

T—*So some words come from slang, some from dialect, and some from colloquialisms. It is our business to find out what is right and use it.*

C—We can derive that words are not just thought up; they come from something.

T—*Yes; for most words that is true.* (To child at board.) *Do you want to be an entymologist or a philologist?*

C—Either. (Discussed meaning, study of words, collector of words.)

About the room were diagrams of the brain, types of eyes (normal, near, far), and a horizontal section of the right eye; charts showing tasting, smelling, touching; charts showing symbols of our democracy (Uncle Sam, the Liberty Bell, the U.S. seal and eagle, Columbia, branches of the U.S. Government); and a chart headed "How Many Keys Can You Claim?" On the chart hung six paper keys and below them paper chests labeled with author's names: Kipling, Dickens, Stevenson, Twain, Alcott, and O'Henry.

Multigrade Experiences

Creative rhythms.—The teacher played one classical record after another. The children were familiar with the stories. Barefoot on a smooth waxed floor, they portrayed the movements at will, some with originality, others with more or less imitation of their classmates. As they danced, in unselfconscious fashion, they formed and reformed groups, now all of one age or class, now of mixed ages or classes; now all boys or all girls, and now together, as the flow of the music or their acquaintance with the stories dictated.

Later, the teacher told the observer that she thought there was some correlation between intelligence and skill in dance performance; that this showed up particularly above fourth grade. At least, the children performed with varying degrees of ease or of beauty.

The sixth-graders remained for social dancing after the others had gone. Boys and girls sat on opposite sides of the room. The teacher called a girl to choose a boy partner; then this boy and girl each chose a partner, and so on until all the children were paired off. In this dancing, too, wide differences appeared in the ability to understand and put into rhythmic action the directions the teacher was giving.

Workshop in homemaking.—The children were making puppets as Christmas gifts for little children. First, each made his pattern, then the puppet; and then stuffed it. Others were weaving, making placemats, knitting, or sewing either by hand or by machine.

Workshop in crafts.—Here, the children were making clay animals, birds, and comic figurines. One boy manned the kiln. Others were making wood bookcases, magazine racks, shelves, and three-dimensional cutout pictures. Still others were weaving baskets. One child was laundering the children's work clothes in an electric washer.

Workshop in fine arts.—Soft radio music played as the children worked on folios, pictures, and cut-paper horns of plenty.

Workshop in language arts.—The children were working alone and in very small groups on stories, poems, plays, and letters. Teachers and principal had expressed to the visitor their concern about an able boy who could not command his energies to do well at all times, and whose work and behavior were erratic. Their concern was over his own unhappiness even more than his underachievement, since they believed the unhappiness to be the cause and the low achievement, the symptom. The services of the school psychologist had been enlisted and the parents consulted, but the boy's behavior was not yet responding to treatment.

Science.—The 100 children in grades 5 and 6 were divided among three teachers according to their interest in three topics: Study of Living Things, Human Beings, or Plants and Invertebrates. The teachers helped the children to be sure they had chosen the right topic and then invited questions and discussed possible resources.

Next day the children who had selected the second topic showed the books they had found: *First Aid Textbook*, *Gray's Anatomy*, *All About the Human Body*, "my sister's notebook on the human body," and a booklet made by "my friend across the street." The teacher brought out some other books, among them *How the First Man Lived*, *The First Man in the World*, *All About Us*, and *The Story of People.* The search would continue in the school and community libraries and the school storeroom.

The teacher asked, "Did you do anything about our study?" One after another, the children reported how they had talked with family members or others, how they had looked for resources. Then they offered ideas about things to do: make models, dioramas, and diagrams; give a play; dissect something; visit a hospital and interview a pharmacist, doctor, and nurse; visit the mental health institute (suggested by a boy whose father was head of a department there), visit the museum; write letters to medical centers, the Tuberculosis Association, the Cancer Society, the Department of Agriculture (about nutrition), and the National Safety Council. Several said they could bring advertising materials which their doctor and dentist fathers received.

Again, the teacher spoke: "Yesterday we chose as our first topic, 'How the Body Works.' What are the various systems we'll want to study?" As the children responded, she wrote on the chalkboard:

Circulatory—heart, arteries, veins, blood
Digestive—stomach, mouth, throat, intestines
Respiratory—lungs, windpipe, nasal air passages
Muscular—"speaks for itself"
Sensory—five senses, nerves
Protective—skin
Skeletal—bones

They decided to begin with the skeletal system.

T—*Find out what you can this evening. Where do we look for information?*

C—I go to our encyclopedias, then to my parents, then to my own books. I have a lot of books. I pick out the important facts and summarize them for a report.

Creative writing.—The teacher invited certain children to form a circle with her. She explained that these fifth- and sixth-graders had scored grade 8 on a spelling inventory, and were now working on vocabulary. She read an advertisement from a label removed from a box of some new chemical to put on firelogs. The children picked out the words that made pictures: rainbow, dancing figures, ballet, and others. The teacher then said, "You are to be advertisement writers. Write the advertising copy for one of these: a new spice cooky, sports car, plant food, stereophonic set, or fabric. Then, if you enjoy the experience, you may go ahead and write some other advertisements that you especially want to do.

Enthusiasm ran high. "Is there a deadline?" asked one. "There's no deadline," replied the teacher. "That sometimes keeps the thoughts from flowing when we are trying to be creative. Tomorrow we'll see how much we've done."

Physical education.—The special teacher announced that any sixth-graders who wished to might join the fifth-graders for square dancing—that the others would do social dancing. They needed to practice the cha-cha, rumba, swing step, and polka. In order to mix boys and girls, names were written on colored slips for drawing. The teacher explained to the observer that many devices are used for this purpose, among them backing into each other, and drawing shoes from the circle. (For the latter, each child removes a shoe and puts it into the circle.)

The social dancing proved a joy to observe. Here, too, special gifts appeared as the children showed their sense of rhythm, coordination, skill, and general release from tension.

Samples of Creative Writing

FOURTH, FIFTH, and SIXTH GRADES

Fun With Words

As useless as—

a fair weather friend
a watchdog asleep
a pencil with a broken point
a nail without a hammer
an old abandoned house

As frightened as—

a lost child in the woods
a baby kitten
a fawn when man comes close
a boy in a dentist chair

As delicate as—

a snowflake
a silver spider web
a baby's tender skin
a rose petal
a pussywillow bud
a drop of water
one tear drop
thin sparkling ice

As fragrant as—

Arpege perfume	an acre of tulips
a juicy hamburger cooking with onions	hot raisin bread in the oven

Poetry and Prose

Lullaby

Day is ending,
Soft light blending,
Dusk is almost here.
O'er the mountain sinks the sun,
Soon the crimson sky is gone,
Stars peep out on everyone.
Time to sleep, my dear.

Our Schoolroom

Our schoolroom is a cozy place, bright with the laughter of the children. The wall of windows welcomes the sun. Three green walls echo the hum of children at work. Blackboards line two walls with gay decorations, adding color. At the front of the room the flag hangs proudly, looking glorious and wise, and guarding us all. The teacher's desk stands close by, like a mother hen surrounded by her little chicks all anxious to learn to peck. Bulletin boards, with their displays, add to the brightness of our room. Yes, our schoolroom is our delight.

These I Have Loved

The noise of the classroom,
Fat books, small books,
Sleep.
The bumping of milk bottles,
Cars rushing past me,
The ticking of the clock.
The funny look of eraser dust.
Blankets, so warm and tender.
These I have long cherished.

A Day on the Water

There's nothing I like so much as a sunbath on the deck of a moving boat. Here I was, getting all the sun I could ask for. Slowly my eyes closed. I could still feel the gentle swaying of the boat. Suddenly I heard cheers! I could hear children saying that we were now passing the Statue of Liberty. Now the clicking of cameras was steady. From shouts I could tell the Williamsburg Bridge was straight ahead. The next thing I heard about was the U.N. I really wanted to open my eyes and see it, but the sun was too luxurious to make me even bat an eyelash. The Yankee Stadium came next, I was still taking a sunbath. Then I heard a boat's whistle and I realized we were passing a tugboat. Suddenly I heard movement all about me, and I realized the boat was ready to dock, and children were hurrying off. It was now time to open my eyes and end my sunbath. I will admit I didn't see the sights, but I got a wonderful suntan!

Responsibility Follows Privilege

In the U.S. we are fortunate to have certain privileges, such as freedom of speech, religion, press, assembly, and the right to vote. With these privileges there is responsibility. We have the right to vote and it is our responsibility to exercise this privilege. We must elect the people who are qualified to keep this nation free and democratic. We should always take advantage of our rights.

Don't Be Afraid To Speak Up

It takes a lot of courage to tell the truth when the truth isn't popular. Our Democracy depends on people telling the truth and facing the consequences.

Brotherhood

If everyone believed in Brotherhood,
All wars and quarrels would cease.
Then all the people of this world,
Would have everlasting peace.
We'd devote our time and effort,
To peace instead of war,
And we would have smiling faces
And peace for evermore!

About an Unusual Winter's Day

Rumbling roller skates pounded away at the road . . . I wonder whether Nature had made a mistake by letting spring come early.

●

. . . the air purred like a sleeping cat.

●

. . . The sun shone brightly and cast fingers of shadows against the pale green grass.

About Night Darkness

When I look into the blinding black night, each dim light startlingly stares me in the eye, and I get a quivering feeling of fright.

●

I felt deserted in the bleakness—like a bird heading into nowhere.

●

There was just one star out, and I guess it felt like me—all alone and worried.

●

The night is a big black top hat; it covers the goldness of the day.

Christmas Shopping

Oh me, oh my, oh gosh, oh gee!
I have to buy a Christmas tree.
I only have a dollar-nine
And I still have loads of cards to sign.
I'll check my lists and write my checks
Then buy my gifts at Sears and Hecht's.

•

Window shopping is lots of fun
But I'm usually glad when it's all done.
I'm not saying I don't like it now;
But I guess that I just don't know how.
Every time I go into a store
When I come out I haven't any money any more.

•

We use catalogs to help us buy
But usually prices are too high
For little children's weekly allowances,
But that's the way the old ball bounces.

Enchanting Sounds

Do you have a favorite sound? Is it sharp and piercing, flat and blunt, hissing and squeaky, gentle and soft?

I like the soft and mellow sounds of the wind. It is like the sweetness of a lullaby, the song of a music box. When I'm outside on a spring day and there is just the calm sound of a breeze, I could sit and listen all day.

It is hard to believe that soon this soft sound of the breeze will become the sharp, piercing sound of a winter storm. My ears dread the winter and await the spring. I wish we had calm sounds all year round.

Some children of high ability, said teachers in several schools, seem to lack the drive or motivation to achieve in any direction or under any circumstances. Interested in finding ways to motivate these children, teachers look for the causes of low aspiration, but the causes are not always easy to detect or to remove. Low energy, poor health, discouragement, uninspiring or troublesome home conditions, early habit development, preoccupation with other affairs—these often are the causes which teachers find difficult to counteract. As a result, the potentially able children often sit idly by, doing what they are required to do, willing to be surpassed by children of lesser ability and higher drive.

It is these underachievers or children with motivational problems, whose gifts and talents may be lost to themselves and to society. The real challange is not merely to identify these children, but to devise a program which will inspire them and help them realize their talents. In discussing this problem, Havighurst states:

> A child of high aptitude but low achievement is one of the most challenging candidates and should be identified. He should not be bypassed because of his low achievement. Lack of interest or motivation may mean that a different type of program, such as psychotherapy rather than an academically enriched program, should be set up for the child.[1]

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[1] See NSSE Yearbook, p. 171, No. 52 in bibliography.

IV

How Teachers Characterize the More Able Children

WHEN "GOOD" TEACHERS are asked what characteristics they observed in the more able children—especially the more academically able—they say that "bright" children are interested in everything: they want to find out, want evidence, seek proof, have depth, travel fast, usually achieve easily; are persistent, sticking to a subject until they understand it; are self-directing and responsible. One teacher in grade 6 said, "It's hard to keep up with them—sometimes I have to apply the brakes in order to pull the loose ends together and catch my breath." They want to work, and want work separated from play. They do many things well, like to study hard things, interrelate subject matter readily, are more verbal, want more books, show more initiative. Many like to make outlines and can use them well; many enjoy writing and produce stories that demonstrate creative ability. Many form their own interest or work groups to attack problems, and for this purpose, rather than limiting themselves to pals, they seek classmates with abilities that will be helpful to the project in hand.

These traits, said the teachers, are not entirely consistent among the more able children. They are not always easy to teach. In fact, some are difficult to teach. This is true of children with narrow or all-consuming interests; they are usually difficult to motivate in areas outside their interest fields, and sometimes even in the fundamentals of the very subject of their interest. Some, with high potentialities as indicated by IQ's, seem to lack the imagination or initiative to become self-propelling, relying constantly on others to lead the way. Many having this lack perform well if they have constant direction. A very fine teacher, after working with a group of able children (from whom those showing initiative had been removed) said, "The class was a dead weight; there were no leaders among them—no one to inspire them, to show them the way. They were always waiting to be told what to do and how to do it."

V

Some Common Elements Pervading Effective Learning Environments

IN ALMOST every school and classroom visited, the observer noted a dynamic quality of excitement. Children, principals, and teachers were busy about things they believed to be important. Contrary to a commonly held impression of school life, the children were not merely sitting, reading, and reciting; they were actually researching to the best of their ability: finding out, singly or in groups, all they could about some interest or topic, often a self-assigned one; preparing reports and reporting to others in challenging, interest-commanding ways what they had found out; deciding with the teacher what were the next steps to be taken "today or tomorrow." They were pursuing individual improvement in the use of fundamental academic skills and abilities: learning to read better, to improve their powers of communication, and to improve their use of mathematics. They were writing and producing plays; preparing demonstrations, exhibits, and displays; and carrying out experiments.

Looking in one classroom after another for the cause of this intellectual excitement, the visitor realized that in spite of differences in organization, there were certain common elements in the environment, the administration, the teaching, the instructional resources, the classroom arrangement, and the children's educational activities. An interrelationship seemed always to be there, indicating that eagerness or activity in any one area apparently set off a chain reaction, which resulted in steadily increasing interest and activity.

The Principals

The present report in no way attempts to analyze all the work done by the principals behind the scenes, but only that part of it which showed up during the observer's visits. It was evident that, whether men or women, they were not merely "front men." Each was a person and educator in his own right, capable of managing an energetic and going institution with an eye for every element, human or material, that was a part of it, but with major focus upon the education of children.

Each principal served as a key professional person in the school. Although his interest in children extended to their total development, his focus remained upon their education. He saw to it that all services available to the school—psychological, health, academic—were administered to the children's advantage.

The principal encouraged the teachers to provide for the growth of individual children. "Functional grouping," "the primary unit," "continuous progress," and other technical references to grouping and progress, were familiar terms in his vocabulary, and he was able to discuss the advantages and problems in these various forms of organization. Whenever he was in a classroom, he entered into the spirit of whatever was going on, and asked the teachers now and then whether they needed help. That self-status was not his goal was shown in the pride with which he exhibited the accomplishments of both children and teachers. He invited close staff cooperation, and in staff meetings, he helped the staff clarify the values supported by the school. In interviews and meetings, he made parents welcome and exchanged ideas and information with them, with the result that each gained a better understanding of the other's role in the lives of the children.

Each principal served also as a warm, friendly host in the school. Not only did the visitor feel this, but the children did, too. Some of them went out of their way to greet the principal and to receive his attention. For instance, in one school a disheveled redhead of about 8 years dropped in the principal's office just to say, "Mornin', Mr. M———." "He comes in every morning," said Mr. M———. "I guess he needs a man's attention. He doesn't have a father." To feel Mr. M———'s pat on his rugged little back seemed to start the day right for Joey.

Accompanying the visitor through the buildings, each principal showed a personal interest in the children, greeted many by their first names, posing questions here and there about parents, the baby, a pet, a trip, or schoolwork. His questions to the teachers revealed familiarity with the children's school progress and conditions affecting their progress.

The visitor was impressed by the fact that the principals had professional stature, and were capable of helping a school set its goals, maintain direction, evaluate its accomplishments and shortcomings, and plan for steady improvement.

The Teachers

The teachers in the classrooms visited showed great differences in personality, and appearance, but certain similar characteristics in the ways they worked with the children became apparent.

The teachers' friendly, cooperative, understanding approach to the children seemed to put them at ease and to invite an active, thoughtful attitude toward the work to be accomplished. Usually the teacher said encouraging things, but occasionally when a child showed signs of getting out of hand, he quietly called attention directly to the work to be done.

Creativeness and spontaneity marked the teaching. Blueprints were not in evidence. New problems were sought for children to explore; new ways of expression were welcomed. The teachers characteristically did not take over and do the creative thinking themselves, nor did they hurry the teaching so fast that the children could not take time to think and to express; instead, they changed pace to let the children move ahead. "Let's do it together," was the invitation for the children to offer ideas, sometimes in their own work groups, sometimes with the teacher.

The teachers took the children seriously, courteously, and with integrity. The children's ideas, invited and freely expressed, were welcomed without the customary accepted or rejected signals—the nod, the smile, the frown, the terse statement. There were no "wrong" answers. All ideas were weighed reflectively by the children and by the teacher for their worth in advancing the thinking or the doing. There was always something to think about.

Most of the teachers liked and respected both children and subject-matter and wanted to bring the two together. They appeared to be well informed, at times even masters of certain subject-matter areas. Whether in literature, composition, social studies, science, mathematics, art, music, health, or physical education, they were sufficiently at home to encourage the children to learn. But they were not infallible. When they did not know, they said so. Not knowing seemed to be no disgrace. Instead, if the interest or need was high enough to warrant a search for information, teacher and children together took steps to find out what they needed to know.

The teachers seemed to understand the unity or relatedness of knowledge, and were not disturbed by transgressing subject-matter boundaries. In fact, they seemed to welcome the flow of one subject into another, as so often happened during the school day.

The teachers showed full respect for the traditionally recognized academic fundamentals of reading, writing, and arithmetic, and insight into how children acquire these fundamentals. The children met situations which called for the use of these skills. Time was available for them to work in small groups, large groups, or individually to further their own skilled development. Interest in skill development varied among the children, but it was aided by records of improvement and attractive materials to invite experimentation.

The teachers accepted the challenges brought by the children. They never seemed thrown off balance by any suggestion. Rather, challenges or questions became exciting points of takeoff for study. No straitjackets appeared to limit subject-matter or experience. Explorations never seemed to reach a dead end. Each thing led on in an open-ended, venturesome sort of way, opening up more and more avenues of interest. In complex undertakings, the children helped each other, the teacher sometimes contributing to the project by bridging a hard spot. Projects were never really completed—merely interrupted because time had run out, or because attention had to be given to something else. There would always be more to find out—more to do.

The teachers showed concern, too, for the social fundamentals. They directed many activities at developing those attitudes, feelings, understandings, and social skills which enable children to participate effectively and happily in the life around them. The teachers helped the children clarify thought and action patterns which are controlled by deep-lying, seldom-challenged attitudes. Many acts of the teachers seemed to be aimed at helping the children develop positive perceptions of themselves, and of how they, as individuals and as groups, influence their own lives and the world around them.

The teachers seemed to understand how to help individual children cope with personal problems which were preventing their progress. In several cases, the teachers revealed to the observer their concern about certain children, and related how they were working with the principal, the psychologist, and others in order to help a child deal with his problem. In one case, an able child who had not been interested in learning to read well was helped to the place where now, in the fifth grade, his appetite for reading could not be satisfied. Another child, blocked by her general dislike of adults (which found expression in rejection of teachers) was finding needed therapy in the patient understanding of her teacher and school.

The teacher seemed to know also how to guide each child to his fullest performance in schoolwork, and to explore his interests beyond the classroom and school walls. In every class, even in the more homogeneous, and in almost every subject, the teachers adapted tasks to varying levels of intelligence and achievement. For example, the social studies or science reports would vary in topic, number and kinds of sources, proficiency in securing ideas from sources, clarity and comprehensiveness of outlines, clarity and complexity of illustrative materials or demonstrations, and eventually in quality and completeness. In mathematics, tasks undertaken individually or in small groups ranged from mastering the simple facts of number relations to exploring new facts about the number system to the principles of geometry demonstrated in a modern car or airplane.

In the classrooms, where children read individually or in small groups, reading tasks ranged from attempts to improve basic skills through the use of materials far below regular grade level to the enjoyment of fluent reading in materials at college level. The range also extended from the limited and supervised use of few books and resource materials to wide independent exploration in all available reference books and encycopedias on a given subject or problem.

Discussions showed the same range in the ideas contributed by the children, each participating in his own way and according to his own ability. Some contributed substantial facts, opinions, suggestions, and questions; while others contributed less often and more simply. The teachers went to some trouble to see that all took part, and in so doing helped the visitor gain a fuller comprehension of what the more able children were doing.

Instructional Resources

To the observer, long experienced in all sorts of schools, the abundance and adaptability of resources available to assure the education of the more able children was impressive. Reading and laboratory materials, special opportunities, consultant help, field trips—all were available or readily secured.

Reading Materials

Located in the classrooms or easily available in the school library or materials center were books needed for current and anticipated studies. Usually, these materials fitted various levels of reading ability. Included were single or multiple copies of textbooks by different authors in science, reading, social studies, arithmetic, spelling, health, and music. Rarely were there enough copies of anything for an entire class to use the same book. Several levels of dictionaries, several sets of reference books or encyclopedias, and supplementary related fiction were likewise on hand. In addition, reading material of a leisure type was available to stir the child's imagination along many lines of interest and to give him pleasure. One teacher's group had hundreds of paperbound books neatly lined up on a low shelf. Usually the class had news magazines and in some cases popular and specialized magazines and a daily newspaper.

Central libraries in the schools were well stocked. Two schools estimated their books for grades 1–6 at between 7,000 and 10,000. The children made the first selection of books for a given unit of study, and full-time, well-trained librarians supplemented their selection. Mobile bookcases carried the books to the classrooms and the libraries had comfortable chairs and tables for the children to use when there for out-of-class research or leisure reading.

Laboratory Materials

Proudly shown to the visitor were explanatory charts, flannelboards and portable chalkboards; maneuverable objects such as sticks, pebbles, and dominoes; simple microphones, strip films, slides, projectors, and maps; musical instruments, puppet stages, art materials, newsprint and other paper; crayons, paint, charcoal, oil, water, and clay; boxes of leather, metal, or cloth scraps; and other materials useful for teaching mathematics, science, geography, history, social studies, music, language, arts, or any other field, or for conducting clubs and activities.

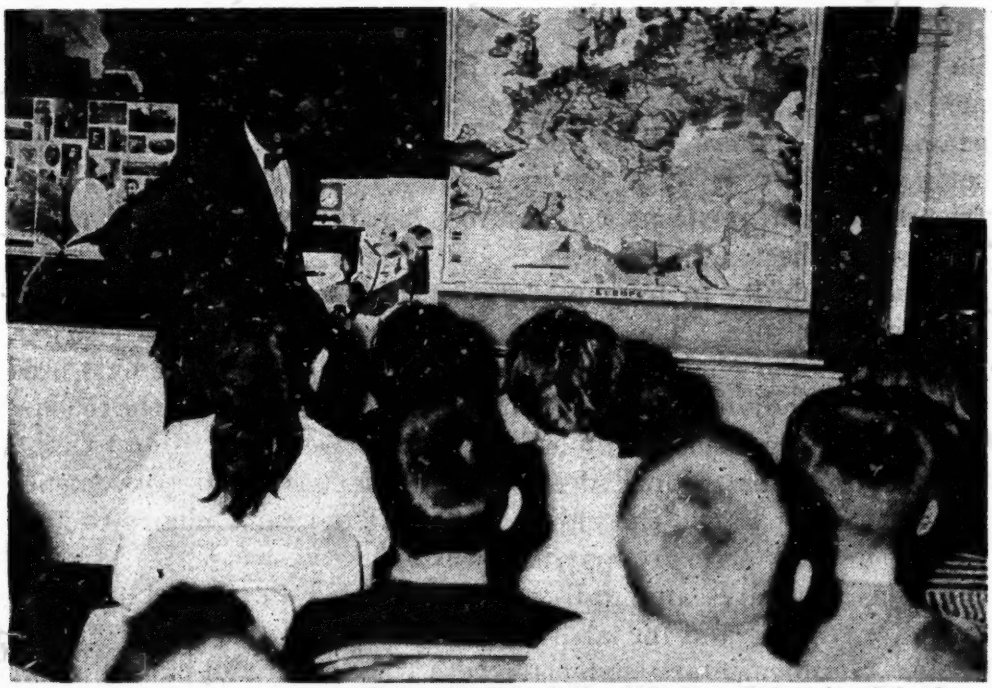
Other Opportunities

Special opportunities were in evidence almost everywhere. Several schools had clubs in science, music, health, literature, dramatics, creative dance, story writing, poetry, school or class newspaper, library, foreign language, mathematics, and leadership. Usually instrumental music attracted a large number of children; from one class of 29, 24 were voluntarily taking violin. Several schools had special musicrooms for storage of instruments and for musical activities. Several provided large crafts centers, equipped for simple wood, leather, and metal work, painting, and ceramics; some, the home arts, particularly sewing and cooking. Several schools also had a special room for science, where equipment, collections, and supplies contributing to all areas of scientific study at elementary school level could be kept, and where teachers might bring children for experiments which could not be carried out in the classrooms. Most schools had ample playrooms and outdoor space for physical education and free play.

Consultant Help in the Classroom

Specialists were available to supplement what the teachers and children were able to do for themselves. An art specialist gave help in art techniques, advised on art materials related to interests of the moment, or introduced new fields of appreciation. Music specialists helped the teachers with their background preparation and, upon occasion, helped the children learn to sing a song or play an instrument, venture into rhythms or dance, or increase their understanding of music from other times or places. Physical education specialists helped the teachers and, in some instances, taught the children.

Here and there, the visitor saw plans on the chalkboards showing that someone from the community had been invited to contribute to a study, and several times she saw community people contributing—for instance, one in science early in the morning before school opened, and one in social science during a free hour on his college-teaching schedule.



University School, The Ohio State University, Columbus

A resource person for social science has just returned from a year in Spain.

One large school had specialists in music, art, physical education, shop, science, and foreign languages; a full-time psychologist, a physician, a reading clinic, and a testing office.

Trips

Firsthand exploration in local industries, arts and crafts centers, stores, public utilities, community service buildings, museums, and parks was easily arranged; sometimes using parents' cars and sometimes using school buses. Several groups enjoyed a week of camping, during which, along with outdoor pleasures, they studied conservation and wildlife.

Classroom Arrangement

Every classroom was vibrant with the children's work: Art—usually informal and colorful, expressing their studies or their impressions. Teacher-pupil-made plans for the day or week, notes on what the children were studying, particularly in science and social studies, notes on the kinds of reports they wanted to make and on the progress they were making. Stories, poems, compositions; arithmetic, writing, and spelling papers; class or school newspapers, and examples of humor. A notable feature was that in no instance did competition appear to be the underlying motivating device; rather, friendly human relations, cooperation, helpfulness, and self-development were reflected.

Maneuverability to accommodate function seemed to be the watchword in furniture. The movable furniture made possible practical arrangements of chairs, desks, and tables to suit the immediate need, whether for individual study, group work, or classes with the teacher. Frequently large, smooth tables were improvised by pulling together the children's flat-topped desks; the chairs arranged conveniently around them. Later, the children carried the same chairs to form reading or arithmetic groups with the teacher.

Extensive shelves and wall storage provided ample and accessible space for reading and for laboratory materials related to some current study. Supplementary materials were wheeled in and out on mobile units; a wide shelf and sink with storage space beneath met the need for the use of watercolors, clay, and other plastic materials and for cleanliness; wide window ledges sometimes served as laboratories for plant study; extra tables became work and display spaces for interests and hobbies; filing cabinets, some recessed and some exposed, served as depositories for the teachers' clinical records and for pictures, clippings, and other two-dimensional teaching aids; a storage closet provided room for large and bulky objects.

Fortunate indeed was the class which had an adjoining workroom. Such a room, equipped primarily with bulletin boards and tables (with access to needed supplies), made it possible for the children to carry out activities which overflowed the classroom and would otherwise have been impossible or at least burdensome for the teacher.

Focus of Energy

Perhaps the most pervasive element in the classrooms visited was a certain atmosphere that stimulated both teacher and children to release and organize their energies for their tasks. No one dissipated his energies by conforming to needless routines or extrinsic standards or by participating halfheartedly or wishing to escape. Apparently each person was doing his best, his interests were genuine, and all elements in the situation, both human and material, encouraged him.

VI

Summary

THE EXAMPLES in this report show some of the possibilities for stretching the school experiences to meet the capacities of the more able children. Many teachers are constantly engaged in similar efforts intended to inspire and to help all children reach their own growth levels, the more able as well as the less able. But, willing as teachers are to do all they can to challenge above-average children, both teachers and children are hampered in their efforts to achieve unless the entire teaching-learning situation supports the children's growth.

Throughout the examples are scattered implications for administrative outlook and action—

for pupil-teacher ratio which facilitates personalized teaching

for help to teachers in identifying the individual talents of children for classroom environments which are rich and varied in resources for learning

for easily available resources in central libraries and other school-materials centers from which teachers may draw to supplement classroom supplies in meeting children's learning needs

for preservice and inservice education of teachers to help them extend their proficiencies in subject matter areas, in understanding the interrelationships of knowledge, and in the use of teaching techniques which enable children to seek their own growth levels

for a professional school setting in which teachers are encouraged, even inspired, to try their own wings in meeting chidlren's growth needs.

There are implications for the teacher also—

to understand growth and learning sufficiently to utilize the individual child's way of learning—the ways of seeing relationships which have personal meaning for him

to understand individual differences sufficiently to identify differences in children's educational needs and other needs which impinge upon learning

to understand the educational possibilities sufficiently to make adaptations to fit individual learners

to develop facility in using both individualized and group instruction in the required and voluntary or optional areas of the curriculum

- to understand the subject-matter areas to the point where interrelationships are clarified, permitting the treatment of subjects integratively, with flexible flow from one area to another, or in separate categories when the situation calls for this
- to cultivate the attitude of mutual learning; i.e., that the teacher as well as the children are learning much from the cooperative probing in which they are engaged
- to develop a variety of approaches to teaching, so that the motivation can be made to suit the learner
- to become well acquainted with the tools of teaching and learning: books, pictures, maps, globes; art, science, and arithmetic materials; trips, and all other resources, old or new, which can be mustered to aid the learning process
- to become sensitive to ways of keeping curiosity alive, of stimulating interest, of making education a joyous and rewarding, never-ending adventure for all.

The examples carry many implications also for learning situations for children, particularly the more able—

- situations which invite and facilitate exploring, experimenting, searching, trying out, learning about the present, going beyond the present; thinking, relating, judging, being generally alert to the world, its processes, history, and events—
  - in academic areas
  - in other areas, such as music, art, poetry, and the like
  - in an atmosphere of responsible and happy individual and social living
- intellectual curiosity which is captured and pursued in interests which in turn give rise to more curosity and activities designed to "find out"
- skills which are developed as the learner seeks and finds information, differentiates between facts and opinions and facts and promotion, expresses and communicates knowledge and opinions, discusses with others in order to pool and clarify ideas, to reach common agreements or beliefs, or to make and carry out a program of action
- responsible action by individual children toward achieving the goals set by themselves or by the group
- experiences which produce self-satisfaction in growth and achievement along lines which the learner and people important to him consider significant.

The present report contains evidence that, in attempting to improve the education of the more able children, professionally trained school leaders and teachers do not begin at scratch. Developments in the past, particularly those in the last three or four decades, have contributed much to our understanding of how and what children learn, of the nature and extent of individuals differences, of how to organize schools and classrooms to the advantage of children, of how to organize subject-matter and learning experiences to meet individual differences among children, of psychological approaches to learning, and of the effects of environmental factors on learning. As the members of a school staff examine the implications for good administration and good teaching which have been drawn from the school visits related in this bulletin, they will note much familiar ground. Real advantage will accrue to the children in our schools as efforts are made by the teaching profession to make all teaching-learning situations good ones.

Appendix

Bibliography

SOME SUGGESTED READINGS

Magazine Articles and Pamphlets

1. Abraham, Willard. A Hundred Gifted Children. *Understanding the Child*, 26: 116–20, October 1957. Chapel Hill, N.C.: National Association for Mental Health, 1303 Mason Farm Road.

   Reports some characteristics found as a result of a study of 100 children of 125 IQ, 7–13 years of age.

2. Barbe, Walter A. Characteristics of Gifted Children. *Educational Administration and Supervision*, 41: 207–217, April 1955. Baltimore: Warwick & York.

   Presents a brief summary of research relating to the physical, mental, emotional, and social characteristics of gifted children. Quotes studies which indicate that in addition to their mental superiority, gifted children are generally superior in physique and general health, personality and character traits, and personal adjustment.

3. ———. Evaluation of Special Classes for Gifted Children. *Exceptional Children*, 22: 60–73, November 1955. Washington: National Education Association, 1201 16th Street NW.

   An evaluation of the Major Work Program in the public schools of Cleveland, Ohio.

4. ———. Helping Gifted Children. *The Gifted Child*, vol. III, No. 1, 4–9, 16, autumn 1959. Cincinnati, Ohio: The National Association for Gifted Children, 409 Clinton Springs Avenue.

   Points out some characteristics of gifted children, some reasons for school problems, the values of counseling, and indicates some organizational patterns for educating the more able children.

5. Blouch, A. What Shall I Do Now? *Social Education*, 20: 369–70, December 1956. Washington: National Education Association.

   Presents ideas for enrichment in the regular classroom.

6. Carpenter, Audrey F. More Than Plot. *Elementary English*, 34: 383–385, October 1957. Champaign, Ill.: National Council of Teachers of English, 704 South Sixth Street.

   Librarian tells how she guided a group in reading.

7. **Fliegler, Louis A.** *and* **Charles E. Bish.** The Gifted and the Talented. *Review of Educational Research*, vol. 39, No. 5, 408–50, December 1959. Washington: National Education Association.

   Reviews research up to date of publication, indicating major contributions of the past 6 years and causes for the recent upsurge of public interest; classifies studies under *Portrait of the Gifted, Educational Provisions and Needed Research.* The bibliography indicates the extent of recent research in this field.

8. **Foust, Clarence.** The Accommodation of Superior Students. *Education Digest* 22: 6–9, January 1957. Ann Arbor, Mich.: 330 Thompson Street.

   Cautions against too rigid identification of the gifted and against regimented learining. Favors guided independent study.

9. **Frazier, Alexander.** Talent and the School Environment. *The Elementary School Journal,* 60: 88–92, November 1959. Chicago: The University of Chicago Press, 5750 Ellis Avenue.

   The director of the Center for School Experimentation, The Ohio State University, discusses three conditions necessary in the school environment for the development of talent: open versus limited learning, individual versus group learning, and thinking versus memorizing.

10. **Gallagher, James J.** *The Gifted Child in the Elementary School.* Washington: National Education Association, 1959. 32 p.

    Discusses in popular vein the intricacies of selecting and educating the gifted.

11. ———. Peer Acceptance of Highly Gifted Children in Elementary School. *The Elementary School Journal.* 58: 465–470, May 1958. Chicago: University of Chicago Press, 5750 Ellis Avenue.

12. ——— *and* **Thora Crowder.** The adjustment of Gifted Children in the Regular Classroom. *Exceptional Children,* 23: 306–312, April 1957.

    Presents an analytical summary of 35 case studies of children of IQ of 150 or more educated in the regular classrooms.

13. **Glennon, Vincent J.** Arithmetic for the Gifted Child. *The Elementary School Journal,* 58: 91–96, November 1957.

    "The growing and widespread use of unit teaching, reinforced with systematic instruction in arithmetic, offers the best hope for meeting the needs of the gifted child in arithmetic. The organization of classroom learning on a more democratic basis, with increased freedom on the part of the learner to participate with the teacher in planning the purposes, the experiences, the materials, and the evaluation of learning; the wide use of individual instruction; small-group and whole-class learning situations with flexibility in evidence in large degree—all will contribute toward creating and maintaining a learning atmosphere that will best provide for the gifted child as well as the average and the slow child." (p. 91)

    The author shows that unit teaching is not enough; a designed program is also needed. Enrichment must be provided, whether "vertical" or "horizontal." The author suggests desirable experiences and materials.

14. Goldberg, Miriam L. On the Semantics of Provisions for Gifted Children. *Exceptional Children*, 22: 277–79, April 1956.

    Discusses the terms "enrichment," "segregation," and "acceleration" as applied to education of the gifted.

15. Goldworth, Mary. The Effects of an Elementary Fast-Learner Program of Children's Social Relationships. *Exceptional Children*, 26: 59–63, October 1959.

    "This report is based upon a 1957 doctoral dissertation, 'The Effects of a Fast-Learner Program on the Social Relationships of Elementary School Children,' School of Education, Stanford University, taken under the direction of Arthur P. Colardarci. A companion study investigating school achievement and interest in science was conducted there concurrently by Richard H. Hinze: 'Achievement Factors Among Fast-Learners in a Partially Segregated Elementary School Program, with Special Reference to Science Instruction.'" (p. 59)

16. Greer, Edith S. *The Education of the Able Student* (Circular 532). U.S. Department of Health, Education, and Welfare, Office of Education. Washington: U.S. Government Printing Office, 1958. 21 p.

    A selected bibliography of books, pamphlets, and magazine articles dealing with gifted children.

17. Groezinger, Eric. *Is More Better?* Trenton, N.J.: Education Association, 180 West State Street, 1959. 5 p.

    Discusses the difference between "quality" and "quantity" learning and indicates the way we can give depth to educational experience.

18. Haggard, Ernest A. Socialization, Personality, and Academic Achievement in Gifted Children. *The School Review*, 65: 388–414, Winter 1957. Chicago: The University of Chicago Press.

    Describes a 7-year research project in the University of Chicago's Laboratory School, studying a selected group of children at 8–9, 11–12, and 14–15 years of age. Reports on findings regarding preadolescents.

19. Havighurst, Robert J., *and others*. *A Survey of the Education of Gifted Children* (Supplementary Educational Monographs, No. 83). Chicago: University of Chicago Press, 1955. 114 p.

    Sets up characteristics of a good educational program for gifted children and describes programs being carried on for these children in 45 American schools.

20. Hoppock, Anne S. About Gifted Children "Everybody Says . . ." *National Elementary Principal*, 37: 17–20, December 1957. Washington: National Education Association.

    Examines critically the ideas set forth popularly about the gifted and ways of educating them.

21. ———. *All Children Have Gifts* (Bulletin 100). Washington: Association for Childhood Education International, 3615 Wisconsin Avenue NW., 1958. 32 p.

22. **Ketcham, Warren A.** Growth Patterns of Gifted Children. *Merrill-Palmer Quarterly*, 1: 188–197, Frst Quarter, 1957. Poughkeepsie, N.Y. (Reprint available from author, School of Education, University of Michigan, Ann Arbor.)

    Shows growth patterns of groups and of some individuals. Discusses school program.

23. ———. Pointers for the Parents of Gifted Children. *New York Parent-Teacher*, vol. XXXVII, No. 5, May 1958. Utica, N.Y.: New York Congress of Parents and Teachers.

    A brief statement to parents, helping them to recognize giftedness in their children and to understand what they and the schools can do to aid the development of such children.

24. ———. What Research Says About the Education of Gifted Children. School of Education Bulletin, 28: 66–69, February 1957. Ann Arbor, Mich.: University of Mich. (Reprint available from author.)

    Discusses briefly the incidence of gifted children in the school population, their characteristics and achievement, and school programs for them.

25. **Laycock, Samuel R.** Counseling Parents of Gifted Children. *Exceptional Children*, 23: 108–110, December 1956.

    Discusses parental influences upon gifted children.

26. **Leese, Joseph.** Let's Try Inspiring the Gifted. *The School Executive* 77: 64–67, November 1957. New York: American School Publishing Corporation, 470 Fourth Avenue.

    Discusses influence of teacher upon gifted children.

27. **Lignes, Carmen.** Special Assignments in Social Studies for Rapid Learners. *The Instructor*, 67: 47, November 1957. Dansville, N.Y.: F. A. Owen Publishing Co.

    Discusses education of superior children in regular classrooms.

28. **MacLean, Malcom S.** Should the Gifted be Segregated? *Educational Leadership*, 13: 215–220, January 1956. Washington: Association for Supervision and Curriculum Development, 1201 16th Street NW.

    Presents case for homogeneous grouping of gifted only if very specific purposes are to be accomplished.

29. **Mann, Horace.** How Real Are Friendships of Gifted and Typical Children in a Program of Partial Segregation? *Exceptional Children*, 23: 199, February 1957.

    Gives description of program for gifted in Colfax School, Pittsburgh, Pa.

30. **Parker, Clyde.** A Measured Experiment with Mentally Advanced Children. *American School Board Journal*, 133: 23–24, December 1956. Milwaukee: 400 North Broadway.

    Describes a measured experiment using an enriched classroom program with mentally advanced children in grades 4 through 7 and in grade 11 of the Cedar Rapids, Iowa, school system.

31. Passow, A. H. Talented Youth Project—A Report of Research Underway. *Educational Research Bulletin*, 36: 199–206, September 1957. Columbus Ohio. Bureau of Educational Research, The Ohio State University.

Gives a report on the nine cooperative research projects being conducted by the Horace Mann-Lincoln Institute of School Experimentation with public school systems throughout the United States.

32. Redford, E. H. Special Opportunities for the Gifted. *National Association of Secondary School Principals Bulletin*, 41: 144–153, February 1957; *The Education Digest*, 22: 16–19, May 1957. Washington: National Education Association; Ann Arbor, Mich.: *The Digest.*

Describes San Francisco's plan for enrichment in regular classrooms.

33. Sheppherd, Anna G. Teaching the Gifted in the Regular Classroom. *Educational Leadership*, 13: 220–224, January 1956.

Enrichment activities in language and creative arts and in social living are given to illustrate the kinds of things gifted children in the classroom should be expected to do over and above the average grade-level program.

34. Strang, Ruth, Mental Diet of Our Gifted Children. *National Education Association Journal*, 44: 265–267, May 1955.

Describes various procedures schools are using to meet the needs of the gifted and talented. Suggests ways in which these needs may be met under most favorable, fairly favorable, and poor conditions.

35. Strauchler, J. Challenging the Rapid Learner. *Social Education*, 20; 161–162 April 1956. Washington: National Council for the Social Studies, 1201 16th Street NW.

Description of a program for the mentally gifted being conducted in the Colfax Elementary School, Pittsburgh. Children spend a half day each in a workshop class and in the regular classroom.

36. Terman, Lewis M. The Discovery and Encouragement of Exceptional Talent. *Test Service Notebook*, No. 14, 1954. (Excerpts from lecture given at the University of California.) Yonkers-on-Hudson, N.Y.: World Book Co. (Full text in *The American Psychologist*, vol. 9 No. 6, June 1954.)

Gives brief historical outline of research about gifted persons. Discusses predictive value of tests discusses personality traits and acceleration.

37. Tyler, Leona E. Studies on Motivation and Identification of Gifted Pupils. *Review of Educational Research*, 27: 391–399, October 1957 Washington: National Education Association.

Reviews research and presents a bibliography.

38. Tyler, Ralph W. Meeting the Challenge of the Gifted. *The Education Digest*, 33: 5–8, February 1958.

States three emphases that must be given when providing opportunities for the gifted, and lists five points that need to be considered.

39. Van Til, W. The Intellectually Gifted Child: A Review of Current Approaches and Issues. *Progressive Education;* 34: 124–125, July 1957.

Analyzes the three major approaches to the problem.

40. Williams, Meta F. *Acceptance and Performance Among Gifted Elementary-School Children.* Vol. XXXVII, No. 8, 216–220, 224, Nov. 12, 1958.

Reports a study of the social acceptance and performance of academically gifted children. The results indicate that social acceptance depends on factors other than intelligence, and that if the school can help rejected children become better accepted, their performance will improve.

41. Witty, Paul. Enriching the Reading of the Gifted Child. *Library Journal,* 80: 2619–2623, November 1955. New York: R. R. Bowker Co., 62 West 45th Street.

Discusses the importance of reading in identifying and educating the gifted.

42. ———. Every Parent and Teacher a Talent Scout. *National Parent-Teacher,* 51: 4–6, June 1957.

Discusses the responsibility of parents to work with the schools in identifying and educating gifted children.

Books

43. Abraham, Willard. *Common Sense About Gifted Children.* New York: Harper & Bros., 1958. 268 p.

Written in lay language for the use of parents.

44. Brumbaugh, Florence N., *and* Bernell Roshco. *Your Gifted Child.* New York: Henry Holt & Co., 1959. 182 p.

45. Cutts, Norma, *and* Nicholas Mosely. *Teaching the Bright and Gifted.* Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1957. 268 p.

Contains a description of the gifted and suggestions for school programs from primary school to college.

46. DeHaan, Robert F., *and* Robert J. Havighurst. *Educating Gifted Children.* Chicago: The University of Chicago Press, 1957. 276 p.

Presents comprehensive and well-integrated view of entire problem.

47. Educational Policies Commission. *The Contemporary Challenge to American Education.* Washington: National Education Association, 1958. 31 p.

Clarifies a viewpoint regarding the need for attention to educating the gifted, and for immediate and long-range provisions for schools.

48. Frazier, Alexander, *ed.* *Freeing Capacity to Learn* (Papers and Reports from the Fourth ASCD Research Institute). Washington: Association for Supervision and Curriculum Development, 1960. 97 p.

The writers express the hope "that readers of these papers will gain many new insights into ways of working to free underdeveloped capacity that will forward our continuing interest in becoming more proficient in this major responsibility."

49. Hildreth, Gertrude H., *and others.* *Educating Gifted Children at Hunter College Elementary School.* New York: Harper & Bros., 1952. 273 p.

Gives summary and evaluation of the Hunter College 10-year-old Elementary School Program. Reports on such topics as school and class organization, curriculum, teaching methods, materials, guidance, and outcomes in achievement, skills, and attitudes.

50. HOLLINGWORTH, LETA S. *Gifted Children, Their Nature and Nurture.* New York. The Macmillan Co., 1926. 374 p.

Presents penetrating analysis of problems based on author's study of children with IQ of 180 and above.

51. NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. Education for the Gifted (57th Yearbook, Part II). Chicago: The University of Chicago Press, 1958. 420 p.

Presents viewpoints and brings research up to date regarding education of the gifted: the social factors, nature of giftedness, and ways of educating gifted children. Contains articles by Havighurst, Hersey, Terman, Witty, Strong, and Passow.

52. OTTO, HENRY J. *Curriculum Enrichment for Gifted Elementary School Children in Regular Classes.* Austin: University of Texas, 1955. 136 p.

Written primarily for classroom teachers by a University of Texas workshop group, this bulletin illustrates enrichment activities in the regular curriculum for gifted children. Shows how these children may help children with learning difficulties, assist with the use of teaching aids, help in the school library and other general school interests. Contains suggestions for activities in communication media, science and social studies, arithmetic, physical education, art, and music; discusses the organization and equipment necessary for curriculum enrichment of gifted children.

53. SCHEIFLE, MARIAN. *The Gifted Child in the Regular Classroom.* New York: Bureau of Publications, Teachers College, Columbia University, 1953. 84 p.

Discusses ways to stimulate activities, lists some activities able children frequently engage in, and describes the role of the teacher.

54. U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, OFFICE OF EDUCATION. *The Gifted Student* (Cooperative Research Monograph No. 2—OE-35016). Washington: U.S. Government Printing Office, 1960. 83 p.

Contains reports of four recent U.S. Office of Education cooperative research studies.

55. WALSH, ANN MARIE. *Self-Concepts of Bright Boys With Learning Difficulties.* New York: Bureau of Publication, Teachers College, Columbia University, 1956. 79 p.

A study of the self-perceptions of 20 bright, low-achieving and 20 adequate-achieving boys, revealing that the low achievers are less frequently free to pursue their own interests and to express their feelings, and are less adequate in responding to environmental stimuli. On the other hand, in feelings of belonging, the two groups showed little difference, and in sex identification, showed none. (p. 38)

56. WITTY, PAUL. *Helping the Gifted Child.* Chicago: Science Research Associates, Inc., 1952. 48 p.

Gives adults help in discovering and assisting superior boys and girls.

57. ZIRBES, LAURA. *Spurs to Creative Teaching.* New York: G. P. Putnam's Sons, 1959. 354 p.

Written for teachers to help them probe the true meaning of creative teaching.

Cooperating Schools

- Allentown, Pa.
  - Jefferson School
- Ann Arbor, Mich.
  - University Laboratory School, The University of Michigan
- Baltimore, Md.
  - Leith Walk School
- Chicago, Ill.
  - University Laboratory School, University of Chicago
- Columbus, Ohio
  - University School, The Ohio State University.
- Montgomery County, Md.
  - Parkside School
- Newton, Mass.
  - Mason School
  - Oakhill School
  - Ward School
- New York City
  - Public School 184—Queens
- Philadelphia, Pa.
  - J. H. Brown School
  - Fox Chase School
  - Masterman School
  - Moore School
- Richmond, Va.
  - Maury School
- Winston-Salem, N.C.
  - Grace Brunson School

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